DECORATED METATES IN

PREHISPANIC LOWER CENTRAL AMERICA

VOLUME ONE

by

Ursula Jones

Thesis submitted in fulfilment of the requirements for the degree of Ph.D. in the

Institute of Archaeology, University College, London

ABSTRACT

Metates are stone objects on which corn and other substances are ground with hand-held stones called manos. Metates and manos have formed part of the standard household equipment in the Americas ever since settled life began to develop there in the 2nd millennium B.C.

In Lower Central America - and specifically within the area bounded by eastern Honduras in the north and the Panama Canal in the south - prehispanic peoples fashioned some of their metates in a highly individual manner, often with a display of sophisticated and complex imagery both in form and decoration. They were made in this distinctive way over a period of at least 1500 years prior to the arrival of the Spaniards.

The aim of this study is to show that, in spite of their diversity, these metates represent an unmistakable cultural trait which is particular only to the isthmian region of Central America. It is proposed that, as such, the decorated metate can serve as a diagnostic marker for essentially Lower Central American cultural traditions in prehispanic times.

In earlier studies, many of these elaborately carved objects from Honduras, Nicaragua, Costa Rica and Panama have been referred to variously as 'altars', 'thrones', 'ceremonial tables', and - sometimes - as 'metates'. In the course of research for the present study it was found that the majority show traces of wear from grinding and that they can therefore be classified as metates.

This thesis brings together material from the entire Lower Central American culture area and presents a comprehensive corpus of decorated metates from reported sites together with specimens available in museums and private collections. Based on some 650 examples, a classification is proposed which has

been organized according to formal attributes and supplemented by a stylistic analysis of recurring motifs and decorative patterns.

A chronological and geographical framework has been added with the help of known data on decorated metates recovered from controlled excavations.

TABLE OF CONTENTS

VOLUME ONE

page

page

LIST OF FIGURES

TABLE OF CONTENTS

VOLUME TWO

ACKNOWLEDGEMENTS

During the many years I worked part-time on my dissertation research, I received endless help and encouragement from so many people in museums in Europe and in the Americas, and also from scholars and private collectors, that it is impossible to thank each one individually. I would like to express my gratitude to them all for either allowing me to photograph their collections, or for supplying me with illustrations and information of decorated metates from Honduras, Nicaragua, Costa Rica and Panama.

I am also indebted to my mother who generously provided me with a personal computer and word processor. However, without the technical assistance of my cousin, Thomas Jakober, who not only taught me how to use a computer, but also programmed my metate database and offered me endless help and advice, I would probably still be compiling hundreds of different details appertaining to isthmian grinding stones.

Many friends and colleagues have been encouraging and helpful, and I am grateful to all of them, but I would especially like to thank Stuart Laidlaw for his invaluable assistance over the years in the photographic laboratory at the Institute of Archaeology.

My main debt of gratitude is to my Supervisor, Dr.Warwick Bray. He has shown enormous patience and has remained a constant source of inspiration and support during the lengthy period it has taken me to complete this study.

FOREWORD

I first became aware of the existence of decorated metates when I searched in the British Museum for unpublished material from precolumbian Central America. Spectacularly carved objects from Nicaragua, Costa Rica and Panama, referred to variously as 'altars', 'thrones', 'ceremonial tables', and - sometimes - as 'metates', attracted my attention and then became the basis of my dissertation for a B.A. degree in 1978. In the intervening years I was obliged to concentrate on other work but, during travels here and abroad, I continued collecting information on decorated metates from the isthmian region.

To my knowledge this is the first study which looks at decorated metates from the entire Lower Central American culture area. Previous major studies on isthmian metates (Mason, 1945; Lothrop, 1950; Stone, 1964; Graham, 1981; Lingen, 1986; Pfeiffer, 1987) have always been confined to specific areas within Lower Central America.

U.J.

London, February 1992.

CHAPTER I

BACKGROUND TO THE STUDY

LOWER CENTRAL AMERICA

The term Lower Central America denotes the isthmus linking Middle America with South America. Defined archaeologically, Lower Central America extends from Honduras to eastern Panama and includes all of Nicaragua, Costa Rica and Panama as well as most of Honduras and part of El Salvador (fig. 1). This delineation is somewhat arbitrarily based on archaeological considerations and was agreed upon by the participants of the 1980 Advanced Seminar on Central American Archaeology, School of American Research, Santa Fe (Lange and Stone, 1984:3).

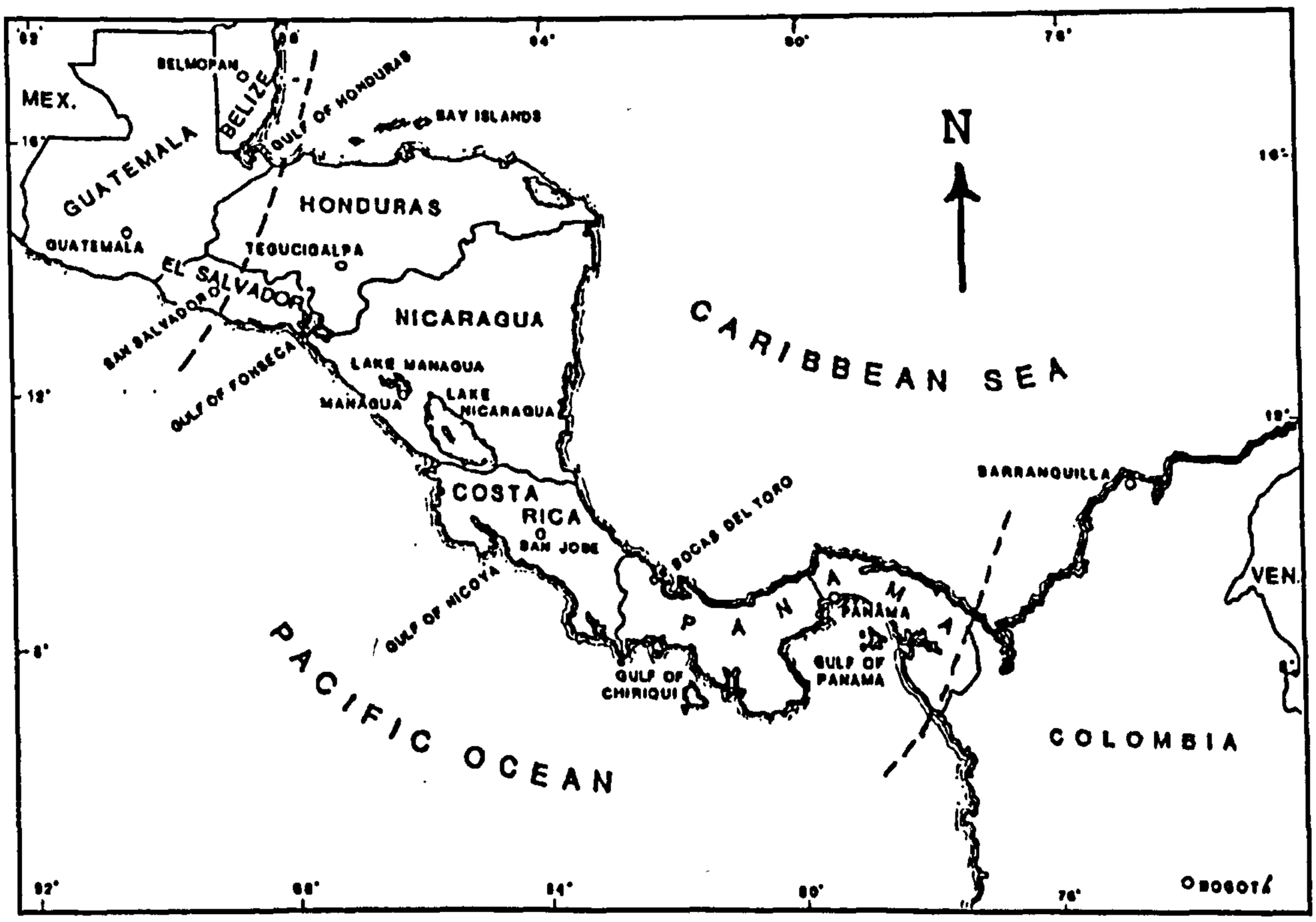


Fig.1. Map showing approximate boundaries (----) of Lower Central America (adapted from Lange and Stone, 1984: fig.1.1)

1. The Geography

Lower Central America as defined earlier lies roughly between 16 and 7 degrees latitude north, and 77 and 88 degrees longitude west. It is bounded by the Caribbean Sea in the northeast and by the Pacific Ocean in the southwest.

The physical shape of the isthmus is narrow and elongated, bulging out only in eastern Honduras and northeastern Nicaragua. An almost continuous chain of volcanoes forms the backbone of the region; some peaks reach altitudes of over 3000 metres.

Basically, the same topography prevails throughout Lower Central America, and three principal contrasting areas can be distinguished:

1. a narrow dry plain along the Pacific coast;
2. a central highland area dominated by volcanoes, with extensive plateaux and valleys;
3. a wide, low and humid Atlantic watershed.

2. The Geology

The line of volcanoes which borders the Pacific edge of Central America, from the Mexico-Guatemalan frontier into Costa Rica and Western Panama, is only once interrupted by a granitic intrusion in southwest Costa Rica, forming the Cordillera de Talamanca. The highland surface of much of southern Honduras and north-central Nicaragua is covered by Tertiary volcanics, now folded and highly eroded (West, 1964a:74). In Costa Rica and

Panama, where the isthmus narrows, the land is largely built of Tertiary and Recent volcanic materials.

Most of the lavas and ashes extruded in Tertiary times were of the andesitic types; those erupted during the Quaternary and Recent periods have been mainly of the basaltic type (Stevens, 1964:268). These rocks are the most common in the isthmian region, with the exception of the Talamanca Mountains area which is granitic.

The andesitic and basaltic rocks are fine-grained and have a predominance of dark-coloured minerals which are particularly rich for plant nutrition. Prehispanic man was thus favoured not only with naturally fertile volcanic soils in Lower Central America, but also with the best raw material for the production of his grinding tools.

3. The Environment and Settlement Patterns

As indicated by its latitude, Lower Central America is a tropical region. It is characterized, however, by a wide variety of ecological niches (fig. 2) which present variable potentials for human habitation and exploitation (Lange, 1984a:59) as is demonstrated in the archaeological record.

The environmental variety of the isthmian region is reflected in the diversity of subsistence patterns adopted by the prehispanic populations. They cultivated seed, root and tree crops with varying emphasis on one or other according to the region, and probably also to the period of time. Evidence indicates (Linares et al., 1975:144) that often all three kinds of crops were cultivated in the same region by the same people. Linares says, 'where one plant complex gained ascendancy over another - as did maize/bean

agriculture in the highlands and root/tree agriculture in the Atlantic sector - local aspects of the ecology and their effects on other parts of the subsistence system must be taken into account'.

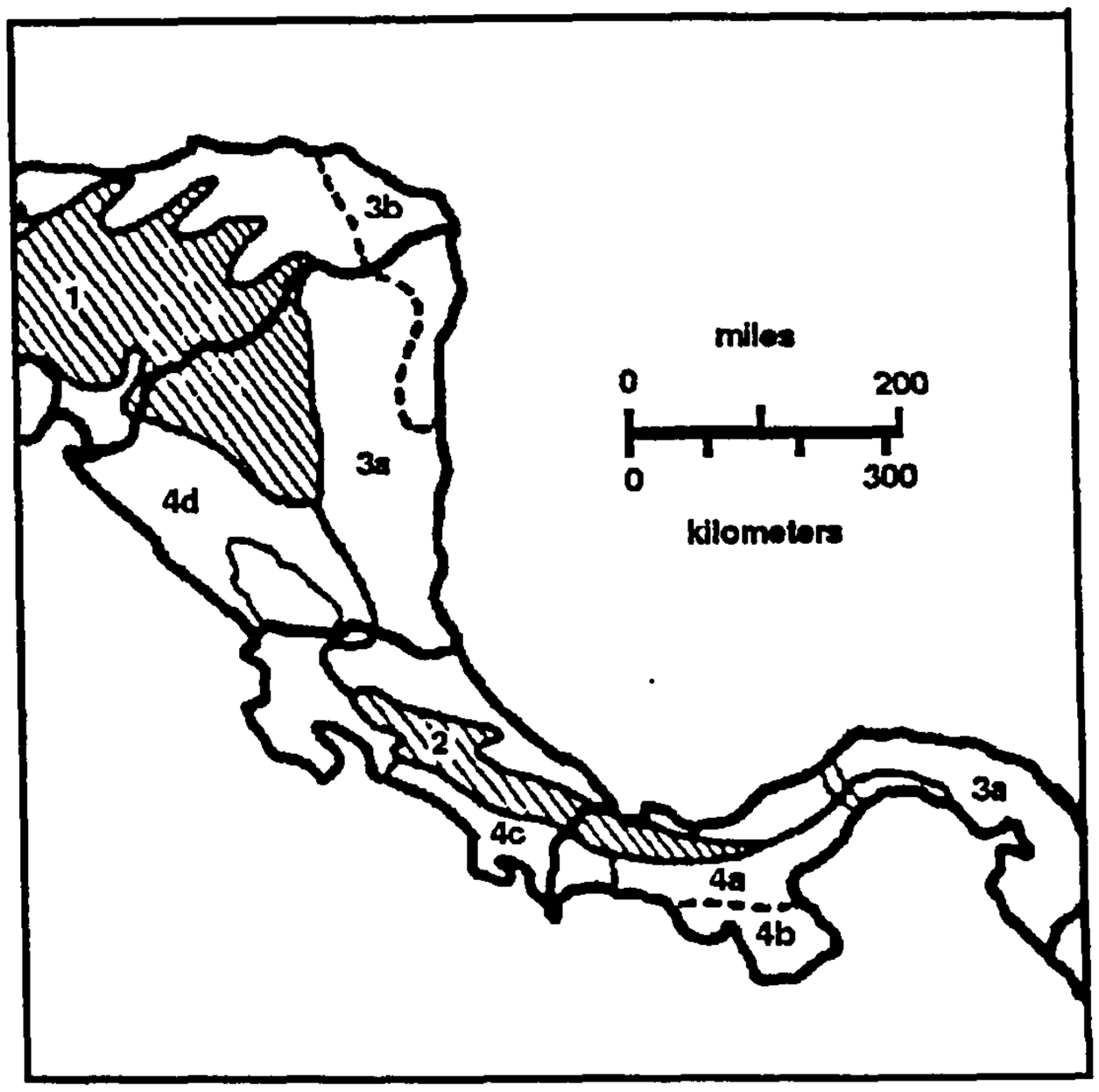


Fig.2. Natural regions of Lower Central America

TROPICAL HIGHLANDS
1 Highlands of northern zone
2 Highlands of CostaRica and western Panama

TROPICAL LOWLANDS
3 Caribbean Gulf lowlands
  a Caribbean rain forest area
  b Miskito coast
4 Pacific lowlands
  a Savanna of central Panama
  b Azuero rain forest area
  c Rain forest of southwestern Costa Rica
  d Volcanic lowlands

(Adapted from West, 1964b:368)

The natural barriers between the two more or less parallel strips of ecologically contrasted tropical lowland - the dry Pacific coast and the wet Atlantic coast - were relatively limited. Lange (1984a:59) points out that, in

numerous locations throughout the Isthmus, the landform provides easy routes of communication between the Pacific and the Atlantic, thus making exchange and interchange of ideas and goods comparatively easy. This applies equally to the movement of fauna and flora.

The highland basins within the volcanic axis, where the climate is temperate and the volcanic soil particularly fertile, were at all times centres with appreciable population densities. However, prehistoric population concentrations in Lower Central America were by no means comparable to those found in Mesoamerica. Of course, the highland basins in Lower Central America are less extensive than in the Mesa Central of Mexico, but evidence from archaeological investigations indicates that the settlement pattern remained dispersed at all times and was characterized by relatively small regional population concentrations.

The archaeological record shows that, apart from the highland basins, the banks along the major river valleys in the Atlantic watershed region were particularly favoured locations for settlement and cultural development; also the areas along the shores of fresh-water lakes as well as around the bays and estuary zones on the Pacific coast. In other words, people settled in areas which offered naturally rich subsistence resources. The three major environmental zones in the Isthmus, which were favoured by prehistoric populations, are described below.

On the Pacific coastal plain, the region around the Gulf of Fonseca in the north as well as the bays in northern Costa Rica were particularly favoured locations for human occupation. Extensive shell middens in that area provide ample evidence of marine exploitation in prehistoric times (Lange, 1984a:44). Another area with evidence of significant cultural developments was the Nicoya Peninsula with the adjacent plain of Guanacaste, drained by the Rio Tempisque. Earliest signs of human settlement in this region date to the beginning of the first millennium B.C. (Lange, 1984b:172). Further

south, prehispanic people were attracted to the areas around the Gulf of Chiriqui and the Gulf of Panama where, by 6000 B.C. at latest (Cooke and Ranere, 1984:10), man exploited both the fertile volcanic soils inland (Piperno and Clary, 1984:101) and the maritime resources on the coast (Linares and Ranere, 1980:234).

In the highland area the fresh-water lakes of Managua and Nicaragua provided attractive natural resources, and the islands as well as the land surrounding the lakes were much favoured areas for settlement, not least because of their fertile volcanic soils.

Evidence of a palaeo-indian lithic complex at Turrialba,Central Highland Costa Rica, indicates human occupation prior to 8000 B.C. (Snarskis, 1979:125 ff.). The Meseta Central of Costa Rica, the largest of the highland basins within the Central American volcanic axis, became - and is still today - the highland area with the densest population in prehispanic times. It consists of two wide intermontane valleys. The larger, but lower, western basin of San Juan (1000-1100 m a.s.l.) drains to the Pacific through the Rio Grande, whereas the smaller, higher basin of Cartago (1300-1500 m a.s.l.) drains to the Caribbean through the Reventazon river. The Central Plateau of Costa Rica thus provided not only a relatively large expanse for settlement, but also offered routes of travel connecting the Atlantic and Pacific coasts (Lange, 1984a:49).

Further south, highland Chiriqui was another favoured zone where prehistoric populations settled from earliest times onwards. In the Rio Chiriqui area lithic stone tools indicate man's presence by 5000 B.C. (Linares and Ranere, 1980:234).

The Atlantic Caribbean coast is full of river systems and much of the area is covered by tropical forest. Annual precipitation averages between 3000 and 4000 mm. The northern part, where the Miskito coastal lowland stretches over some 1000 km, is not well known archaeologically. Nevertheless, it is

thought (Magnus, 1978:61ff.) that this grass-pine landscape, which reaches in some places a width of as much as 150 km, was exploited in prehispanic times for both coastal marine and inland farming resources. However, evidence indicates that the best locations for human settlement were the levées along the major streams in the Atlantic Watershed (Snarskis, 1984a:160). With the added resources of river fish and amphibious mammals, these embankments attracted populations from earliest times onwards, and it appears that farming was well under way in that region by the first millennium B.C. (Snarskis, 1978:291 ff.).

4. Defining the Area Culturally

Gordon Willey (1959, 184 ff.; 1971:255) uses the term 'Intermediate Area' to describe the region between Mesoamerica and Central Andean South America, the two centres of high civilization in precolumbian times. Lower Central America represents the northwestern part in this area. There is no doubt that the 'Intermediate' concept is a valid one in its geographical meaning; but its cultural implication as a 'link' between the two highly developed areas is far from clear-cut.

Until recently, Lower Central America was regarded traditionally as little more than a corridor for cultural contacts between the North and South. As stated by Frederick W. Lange at a Dumbarton Oaks Symposium in October 1987, the tendency was to examine the region in terms of cause and effect relationships with the adjacent areas, and the main interest was concentrated on dividing the region into two defined cultural zones, one with a Mesoamerican tradition and the other with a South American tradition.

Since no geographical break divides North and South America, it is clear that the isthmus region, by nature of its situation alone, could have served as a natural passage to a flowing cultural movement. That this happened in reality is demonstrated by artifact similarities. However, modern research has put more emphasis on internal developments, and evidence from numerous recent investigations indicates that, although influences of Mesoamerican and South American traditions can be recognized in the isthmian region to varying degrees at different times, these outside influences were not the principal cultural motivation in Lower Central America. It is now thought that the natural resources of this fertile region supported peoples in considerable numbers enabling them to evolve their own successful and complex systems (Linares, 1979:38). Evidence suggests that local adaptation and adaptability were the primary stimulus for development throughout time (Bray, 1984:308).

On this assumption it will be suggested here that the isthmian area had its own independent cultural traditions and that the carved and decorated metate can be singled out as a particular cultural feature which defines Lower Central America.

Within the area there is, nevertheless, considerable cultural diversity in time and space. Archaeologists today generally divide the region into five zones with distinct cultural traditions: Greater Nicoya, Central Highland and Atlantic Watershed Costa Rica, Greater Chiriqui, Central Panama and Eastern Panama.

5. Indigenous Populations

At the time of the Spanish arrival in Lower Central America in the 16th century, the indigenous population consisted of farming communities who

cultivated maize, sweet manioc, beans, gourds, chili peppers, sweet potatoes and cacao, together with various species of fruit tree, tobacco, cotton (Baudez, 1970: 20) and palms. They lived in small villages and hamlets and, in general, the societies had not developed beyond the level of 'chiefdom' stage. Both ethnohistoric accounts (Oviedo) and archaeological investigations (Lothrop, 1937-1942; Cooke, 1979) have confirmed the existence of substantial chiefdoms in prehispanic Central Panama. Ethnohistorical data indicate that, at the time of the European contact in circa AD 1500, some three dozen chiefdoms of varying importance and size were established in Panama (Helms, 1979:10). However, it has been argued (Creamer and Haas, 1985) that tribes rather than chiefdoms were common in many areas of Lower Central America.

The languages of the native populations from Panama northward to eastern Honduras belonged to the larger Macro-Chibchan group (Coe, 1962:170), although small groups of Chorotega and Nahua speakers along the Pacific coast were noted at the time of the Conquest (Baudez, 1970:19). Surviving Indian tribes today amount to less than 1% in Costa Rica, approximately 5% in Nicaragua and Honduras, and 8% in Panama (Hanle, 1977).

6. Basic Chronology

Chronology presents a major problem in Lower Central America. So far there is no region with a complete time sequence for human occupation (Lange and Stone, 1984:11) such as is available, for instance, for Mesoamerica. Many parts of the isthmian area still remain unexplored.

NORTHERN ZONE | GREATER NICOYA | CENTRAL COSTA RICA | GREATER CHIRIQUÍ | CENTRAL PANAMÁ

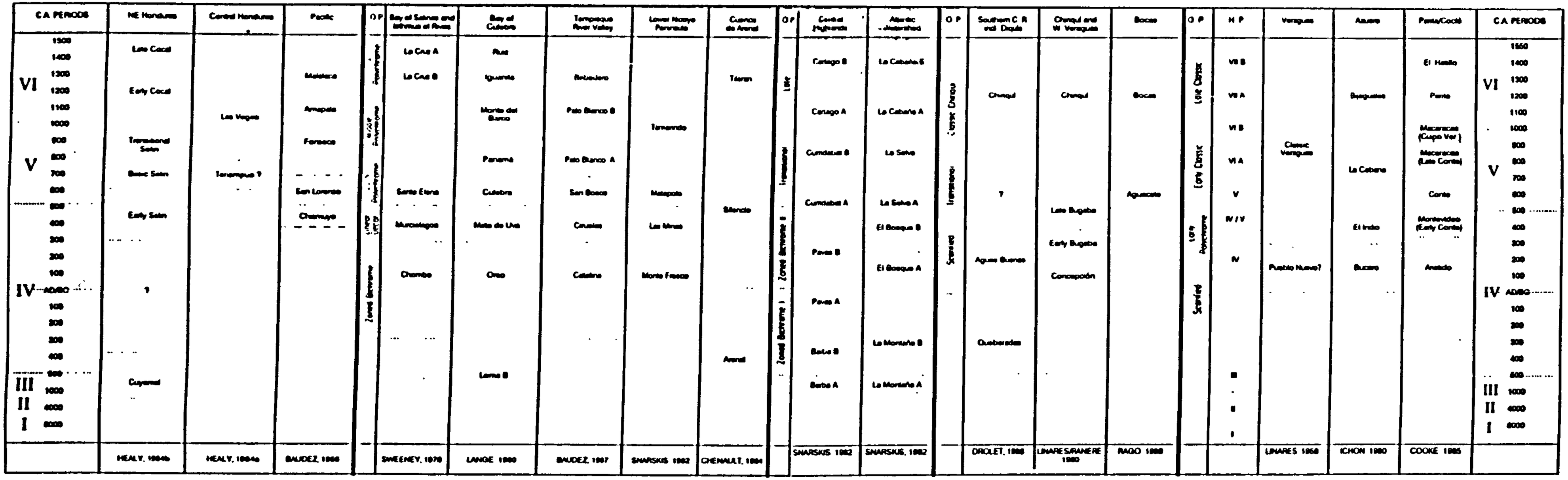


Fig. 3. Archaeological phases in Lower Central America

C. A. = Central American periodization (Santa Fé, 1980)
O. P. = Old regional periodization
N. P. = New regional periodization (Central Panamá)

Although the last two or three decades have seen numerous excavations all over the isthmian area, it has not been possible to produce an overall chronological picture. Instead we are faced with a great number of local time scales, - a situation which is more than a little confusing (fig. 3).

In order to resolve this methodological problem to a certain degree, the Conference on Lower Central American Archaeology in April 1980 at the School of American Research in Santa Fe, New Mexico, proposed a standardized chronological time-table for the isthmian area (Lange and Stone, 1984:fig.1.2). The periods correspond more or less to the important cultural thresholds throughout Mesoamerica and Central Andean South America:

Period I	? - 8000 BC:	Paleo-Indian Hunting and Gathering
Period II	8000 - 4000 BC:	Pre-Ceramic Period, Hunting/Gathering
Period III	4000 - 1000 BC:	Transition to Cultivation and Introduction of Ceramics
Period IV	1000 BC - AD 500:	Formative Period
Period V	AD 500 - 1000:	Period of Expansion (Polychrome ceramics)
Period VI	AD 1000 - 1550:	Late Period

Evidence relating to decorated metates dates from Late Period IV (1st century AD) to Period VI.

7. A brief Survey of Isthmian Stone Sculpture

Large-scale stone sculpture is outstanding in the rich and varied material culture of prehispanic Lower Central America. The earliest traditions of carved stonework emerged there during the first few centuries AD and

rapidly reached a peak. Stone sculpture continued to be produced throughout the prehispanic era.

Elaborately decorated metates became an isthmian feature from the first centuries AD onwards and remained a dominant element throughout the precolumbian period.

The earliest manufacture of freestanding isthmian stone statuary, known to date, developed in Barriles in highland Chiriqui around AD 400. This site is known for its life-size single and double figures, cut in the round and standing on pedestals (Haberland, 1960). The double figures depict nude males carrying on their shoulders dressed personages with conical hats and wearing necklaces with anthropomorphic pendants. Some figures hold a trophy head in one hand and a weapon in the other. The statues were associated with stone balls and stone drums, i.e. barrel-shaped stones, from which the site of Barriles takes its name.

Freestanding statuary was produced also in Central Panama by the middle of the first millennium AD. From the site of El Caño, nr. Nata, Cocle, which is thought to have been used for funerary purposes from AD 500 onwards (Cooke and Bray, 1985:44), over one hundred columnar statues with human or animal features had been reported in the 1920's (Verill, 1927), but have since mysteriously disappeared (Torres de Arauz and Velarde, 1978). The statues probably belong to the period between AD 500 and 1200 (Cooke, 1976a:31).

In Greater Nicoya and Central Costa Rica the production of freestanding large and small statuary began to develop from about the 7th or 8th century AD onwards. Monumental stone statues are known from the area around Lake Nicaragua and Lake Managua and are thought to belong to the period between AD 800 - 1200 (Baudez, 1970:136). Because they were removed in unrecorded circumstances, their meaning or function remains obscure. From east of Lake Nicaragua, in the Department of Chontales, a number of tall

statues were reported, some measuring over four metres in height. They represent human figures, carved in the round, elaborately clad and wearing headdresses, sometimes with little animals perched on top (Zelaya-Hidalgo et al., 1974). A number of these statues are now in the Museum of Juigalpa, Chontales, Nicaragua.

The statues associated with the islands of Lake Nicaragua and Lake Managua and the Isthmus of Rivas region are radically different in style, although presumed contemporary with the Chontales statues. The majority depict life-size humans, male and female, generally in the nude, in sitting, standing or kneeling position (Arellano, 1979). Usually a feline creature or alligator is perched on the shoulders or head or clinging to the back. Some figures wear huge bird masks, or masks representing alligators, snakes or felines. Several statues are today in the Colegio Centro-Americano in Granada, Nicaragua.

Somewhat less monumental but still spectacular stone statues, both large and small, began to be made in central and eastern Costa Rica from about AD 700 onwards. The earlier type consists principally of standing male figures, some almost life-size, but in general between 25 and 50 cm in height. These effigies wear fantastic alligator masks and tiered headdresses, as well as necklaces with prominent pendants. The appearance of these figures is very standardized, always in the same pose with arms akimbo and hands on chest or hips. Small freestanding heads, mainly human, but some animal too, were also made during the same period. Statues of the period after AD 1000 often depict bound prisoners or warriors with trophy heads in one hand and an axe in the other, or with a trophy head hanging from a rope slung over the shoulder. They vary in size, but are extremely stereotyped in appearance, as is the case of female figures of the same period. These are generally depicted holding their breasts.

In Central Costa Rica and Greater Chiriqui the last five or six centuries before the Spaniards arrived were marked by an almost mass production of large and small statuary as well as of decorated metates. A vast amount of carved stonework was found at the site of Las Mercedes in Atlantic Watershed Costa Rica when the Linea Vieja railway was built right through the middle of it. Among the great variety of artifacts were many different kinds of metates, especially jaguar effigy metates; also large stone slabs with animal, or half-human half-animal creatures carved in openwork on the top and sometimes along the sides. These slabs are thought to have served as gravemarkers; the bottom edge was left undecorated, presumably to be set into the ground. Luckily one of the engineers in charge of the railway construction, Minor Keith, took an interest in the artifacts and shipped a huge collection back to the U.S.A., later described in detail by J.Alden Mason (1945).

One of the most frequently encountered type of statuary found in Central Costa Rica during the last few centuries prior to the Spanish arrival is the so-called Sukia figure. Sukia is the name applied to medecine men. The figures depict small squatting males, either with arms crossed or holding a tube to their mouths for smoking or blowing. Occasionally they appear as double-figures, back to back. Sukia figures have been described as shamans performing a curing ritual.

In the Diquis region of Costa Rica (Greater Chiriqui cultural zone) stone statuary of a radically different style from that of other regions in Costa Rica is known from the last five or six centuries before the Spanish arrived. One peculiarity is represented by the peg-base figures, carved mainly in sandstone. They appear with a peg or shaft base, apparently to be placed into the ground to serve as architectural embellishments. They are anthropomorphic figures, varying in height generally between 30 and 70 cm. The figures are predominantly male, carved in a highly stylized manner,

sometimes with arms crossed over the chest or holding a trophy head or a weapon in their hands. At times they appear with either a single or forked serpent tongue hanging out of the mouth.

The other unique feature of isthmian stone sculpture in Diquis is represented by the enigmatic stone spheres, ranging in size from very small to over two metres in diameter. They have been found in the vicinity of cemeteries, apparently in alignment on the surface, some mounted on platforms of cobbles (Lothrop, 1963:15ff.). Their function and meaning is as yet unclear.

Diquis stone sculpture of the period after AD 1000 also includes animal figurines of jaguars and armadillos, carved in sandstone and varying in length between 20 - 40 cm.

The chain of volcanoes that forms the backbone of the isthmus provided an abundance of andesitic and basaltic rocks ideal for stone carving. Objects were carved from single blocks, using only stone and wooden tools. There is no doubt that isthmian stone sculpture ranks amongst the finest achievements in precolumbian America, both for the skill and craftsmanship and the imaginative 'artistic' sense which it displays.

THE METATE

The name 'metate' applies to grinding slabs and bowls of stone which are used for processing corn and other substances with hand-held stones called 'manos'.

The term 'metate' is derived from the Nahuatl 'metatl', but is commonly used today to describe the grinding stones of precolumbian America in general.

Metates occur in a great variety of shapes and sizes, from less than twenty centimetres in diameter to over one metre in length. It can be assumed that they were used throughout the ages not only for processing corn, but also for grinding many other substances including nuts, seeds, leaves, beans, and for mashing and crushing tubers, fruits, berries, mushrooms, as well as for pounding and pulverizing medecines, tobacco, bark shavings, pigments and potter's clay.

Most metates are carved from volcanic rock of a vesicular kind which provides an excellent surface for grinding. In prehispanic - and modern - times they were (and are still) generally made as straight-forward functional implements, without any decoration, carved to suit the required purpose in the household. Decorated specimens have rarely been recovered outside Lower Central America. A few examples are known from Mesoamerica, e.g. from Guatemala (Hartman, 1907:43,44; Parsons, 1969:85 and P1.25), Veracruz (Sotheby N.Y. Auction Catalogue 19.11.90: item 338), Guerrero (Bolz, 1975: fig.XXX; Lourdes Suarez, personal communication), West Mexico (Williams, 1988:89) and from Ecuador (Verneau and Rivet, 1912:185).

1. The Decorated Metate in Lower Central America

Within the isthmian area, bounded by eastern Honduras in the north and the Panama Canal in the south, prehispanic peoples produced not only the traditional undecorated metates but also unusually sophisticated specimens, both in form and decoration. These metates were fashioned in a highly individual manner which appears to represent a tradition particular only to that region. Some metates were carved spectacularly in the shape of zoomorphic effigies and many are decorated with a display of a fantastic imagery. Ornaments were fashioned in low and high relief techniques and often also sculpted three-dimensionally. The people who carved the effigy metates were undoubtedly inspired by their environment. However, in some instances, the splendid imagery depicted seems too complex to be simply of a decorative nature and was, in all probability, closely bound up with local ideas and beliefs.

Authors have interpreted some isthmian metates with elaborate embellishments as ceremonial tables, altars or thrones. There is no doubt that some specimens could have served more than one purpose. However, the majority of decorated metates which I have examined show traces of wear from grinding which suggests that they were used regularly in the prehispanic household. The small number with only slight or no evidence of use include some of the very highly ornate ones and some oversize specimens with platforms too thin and fragile for daily usage. It is possible that such metates had ritualistic and/or ceremonial connotations.

Decorated metates have been found principally in a mortuary context, but a number of finds have also been reported from habitation floors (fig. 4).

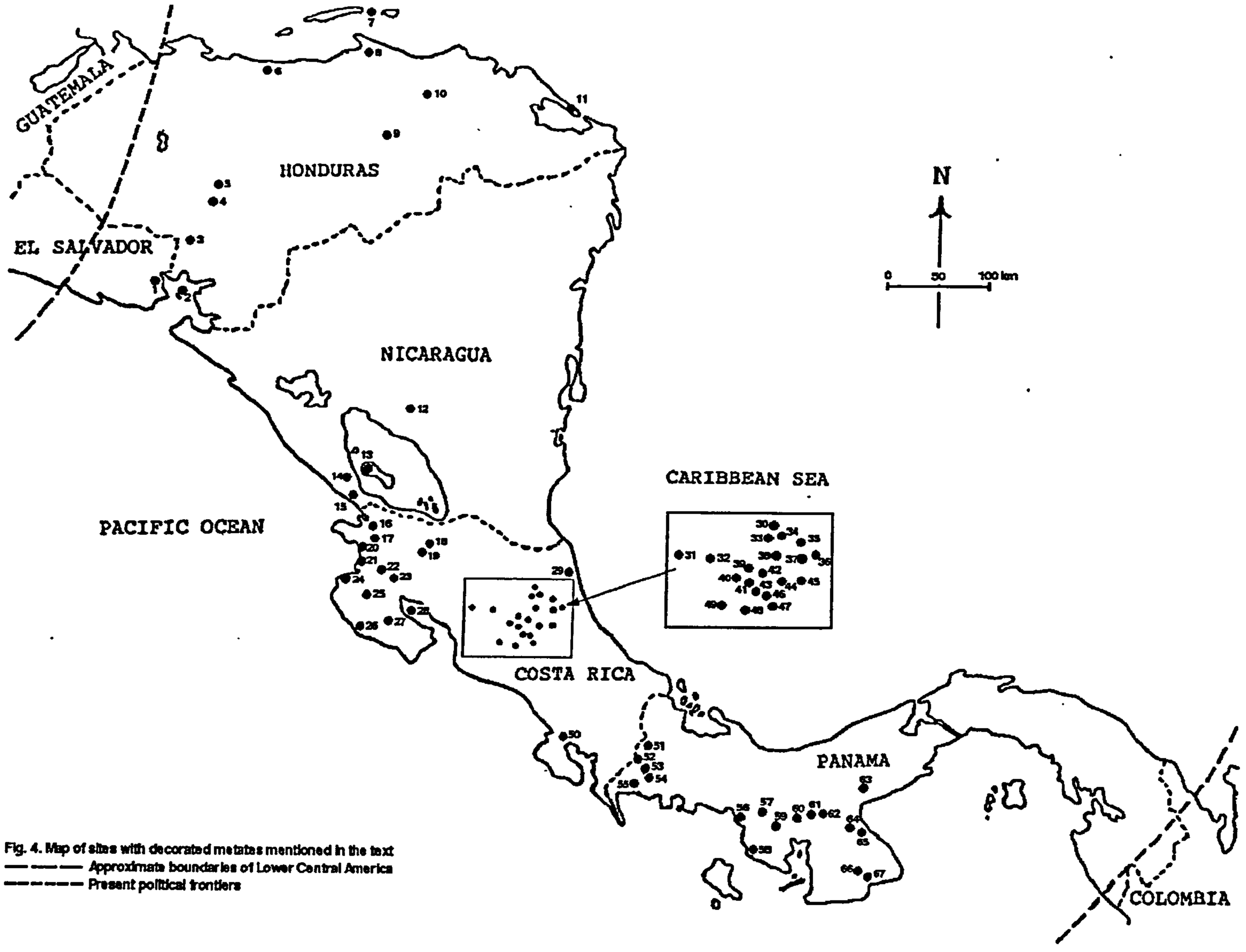


Fig. 4. Map of sites with decorated metates mentioned in the text
——— Approximate boundaries of Lower Central America
– – – – – Present political frontiers

Key to sites on map (previous page, fig.4):

EL SALVADOR:

Quelepa (1)

HONDURAS:

Agua Escondida, Guajiquiro (3)

Barburata Island, Bay Islands (7)

Cocobila, Laguna de Ibans (11)

La Ceiba (6)

Las Vegas, Comayagua Valley (5)

Los Andes, Rio Sico Valley (10)

Rio Claro, Dept.Colon (8)

Tenampua, Comayagua Valley (4)

Tigre Island, Bay of Fonseca (2)

Tonjagua, Agalta Valley (9)

NICARAGUA:

La Libertad (12)

Moyogalpa, Ometepe Island (13)

Rivas (14)

San Juan, Isthmus of Rivas (15)

COSTA RICA:

Aguacaliente, nr. Cartago (47)

Azul de Turrialba (45)

Buenavista, Rio Frio (18)

Cartago (46)

Cerro de Puriscal, Prov. San Jose (49)

Cuenca de Arenal, Guanacaste (19)

Filadelfia, Tempisque River Valley (22)

Guacimo, Linea Vieja (34)

Guayabo de Turrialba (38)

Isla Chira, Gulf of Nicoya (28)

La Colombiana, Linea Vieja (36)

La Fabrica de Grecia (32)

La Guinea, Tempisque River Valley (23)

La Union de Cartago (43)

La Union de Guapiles (33)

Las Huacas, nr. Nicoya (27)

Las Mercedes, Linea Vieja (35)

Las Pavas, nr. San Jose (40)

Matina, Santa Cruz, Guanacaste (25)

Monte del Barco, Bay of Culebra (24)

Nacascolo, Bay of Culebra (21)

Naranjal de Nicoya, Guanacaste (17)

Nosara, Nicoya Peninsula (26)

Palmar, Diquis (50)

Papagayo, Bay of Culebra (20)

Potrerillos, Guanacaste (16)

Retes, Cartago (42)

San Isidro de Arenilla, Prov. San Jose (48)

San Isidro de Heredia, nr. San Jose (39)

San Ramon, Prov. Alajuela (31)

Severo Ledesma, Jimenez River Valley (30)

Tibas, nr. San Jose (41)

Tierra Blanca, Cartago (44)

Tortuguero, Pocosi, Limon (29)

Williamsburg, Linea Vieja (37)

PANAMA:

Bahia Honda, Peninsula de Las Palmas (58)

Barriles, Volcan Baru (51)

Bugaba, Chiriqui (54)

Divala, Chiriqui (55)

El Hatillo, nr. Parita (64)

El Indio, Tonosi Region (67)

Guaniquito, Tonosi Region (66)

La Concepcion, Chiriqui (53)

Las Palmas, western Veraguas (57)

Pueblo Nuevo, Rio Tabasera (56)

Quebrado Hondo, nr. Santiago, Veraguas (61)

San Andres, Bugavita, Chiriqui (52)

San Pedro, nr. Santiago, Veraguas (60)

Santiago, Veraguas (62)

Sitio Conte, Cocle (63)

Sixto Pinilla Place, nr. Parita (65)

Sona, western Veraguas (59)

2. Use of the Metates

As mentioned earlier, metates are used not only for grinding corn, but also for processing numerous other substances. The great variety in shape and size is a clear indicator that the purpose of the isthmian metates of prehispanic times was not uniform. Grinding surfaces in particular vary a great deal in form and size and so represent a critical aspect in determining the functional use of a metate.

Since maize has formed the principal diet in most parts of Central America throughout the ages, the two characteristic methods of processing it are taken here as the decisive factor for determining the usage of metates:

- One way is by soaking the corn first and then grinding it - while still wet - on the metate with a roller mano and forming the paste into round, thin and flat pancakes, - the common method in Mexico and Central America of preparing maize for 'tortillas';
- the other method is by grinding dry corn into flour, - the traditional way in the rest of the Americas.

These two different methods of maize processing, which were and are still today used in Lower Central America, decide the shape of the grinding top. Two distinct forms can therefore be differentiated:

- 1. The Mesoamerican way of maize processing requires a rimless rectangular grinding plate which is slightly curved lengthwise. The metates are usually three-legged and used with long cylindrical or tapering roller manos which are mostly longer than the width of the grinding plate. Depending on the height of the metate, the person grinding stands or kneels at the two-legged end and holds the mano at both ends rolling or pushing it along the top.
- 2. Dry corn is commonly ground in a concave or rimmed metate which keeps the grains and kernels in the central grinding area and prevents them from falling over the edge. Evidence of different shaped manos suggests that these metates had multiple uses.

In this study the distinction will therefore be made between the 'special purpose metate' used specifically for grinding soaked corn with a roller mano in the manner which is typical in Mesoamerica, and the 'multipurpose metate' which is used for grinding dry corn into flour as well as for grinding, mashing and pounding other substances. The different shaped manos associated with the latter include: rectangular, loaf-shaped and soap-bar-shaped manos which indicate a pushing and/or pulling movement; round and conically shaped manos which suggest a rotary and perhaps also a rocking movement; and stirrup shaped manos which imply a sideways rocking movement.

That manos could occasionally be used as weapons too is demonstrated by a passage in the 1632 'Historia verdadera de la conquista de la Nueva España' by Bernal Diaz del Castillo (1940:565). Towards the end of the book where he remembers his fellow conquerors who were mostly dead he mentions: "Y pasó un fulano Juarez, el Viejo, que mató a su mujer con una piedra de moler maiz; murió de su muerte."

Fig. 5. 'Modo di fare il pane' (Benzoni, 1572:Lib.I,57).

There is little evidence from ethnohistoric sources as to the ways metates were used. One of the earliest documents is Benzoni's illustration 'Modo di fare il pane' (fig. 5) in 'La Historia del Mondo Nuovo' (1572:Lib.I,57). He also tells us of maize grinding (ibid. 59) for the purpose of making 'vino'. Oviedo too mentions 'vino hecho de nueces de palme' (Drolet, 1982:34) inferring the processing of palm nuts.

Information from archaeological material is of necessity by inference. Excavations rarely produce metates together with manos which would help to determine how they were used. However, grinding on metates was depicted repeatedly in prehistoric Central America, both in pottery and stone, sometimes indicating other substances than maize. As mentioned before, the variation in shape and size of the grinding tops is certainly a good indicator that their purpose was not uniform.

Furthermore, it can be assumed that many metates served for grinding purposes as well as for sitting on, or as tables, pot stands, funeral biers or grave walls, depending on their overall shape, size and structure.

3. Technological Background

The spectacular forms and embellishments which characterize the decorated metates from Lower Central America are today a source of constant amazement to us when we consider that, in prehispanic times, a metate maker worked entirely without metal tools. So, how was a metate made and how did the artisan achieve the intricate ornaments we admire today?

Raw material presented no problem. The backbone of the isthmian region is formed of an almost continuous volcanic chain where fine-grained crystalline rocks such as andesite and basalt abound. These rocks are relatively easy to work. However, the most easily workable stone is not necessarily the most useful for the production of metates. Ideally the stone for a metate should not be too brittle, otherwise surfaces tend to crumble or become pockmarked or too smooth with use (Cook, 1973:1485ff.).

Nowadays stone is quarried by blasting, and metates are made with metal chisels and hatchets. But in prehispanic times the use of metal tools was unknown, and quarrying and stone-cutting activities depended entirely on the employment of wooden and stone tools.

No documentary evidence is available to us from prehispanic Lower Central America. However, the foremost 16th century ethnographer in Mexico, Fray Bernardino de Sahagun, provides us with an illustration of a stone-cutting scene from that period (1959: Book 10, 40). It shows that wedges and huge sledge hammers of wood were used for the quarrying and, in the foreground of the picture, an array of stone chisels is shown which formed part of the tool kit for the carving and shaping of the stones.

In some areas of Central America metal tools were introduced only very recently, and in these places certain stoneworking technologies remained virtually unchanged until modern times. From recent ethno-archaeological studies amongst the Maya in the Guatemalan highlands (Hayden and Nelson, 1981) and among Zapotec Indians in the Oaxaca Valley (Cook, 1973) we can learn how natives produced metates and manos before the introduction of steel tools. Some of the older stoneworkers from these areas remember working exclusively with stone tools in their younger days.

It is not surprising to learn that the quarrying of stone and the initial roughing-out of the large stone blocks involved extremely hard work.

Wooden sledge-hammers weighing about ten pounds were used for the job, - undoubtedly a cumbersome and also dangerous way of mining the stone. Apparently the hammer often split, hitting the workman. The block of rock was then roughed out with a large stone hammer, weighing up to four or five pounds. Such tools were shaped to a point at the tip, similar to the tip of a thick handaxe; if very heavy, they had to be manipulated with two hands.

The next stage involved shaping the outline of the stone in more detail. This was done with a lighter stone tool which had a fairly sharp and pointed working edge. With it larger and smaller flakes could be removed to give the metate its basic form. The separation of the legs was probably achieved by drilling holes into the solid stone block at specific points; the areas between the holes were then removed by short, hard blows with a stone hammer.

Smaller tools were required for the finishing work: rounded tools for smoothing the surface and pointed ones for carving finer details.

It seems reasonable to assume that the stone-age method of making a metate, as related by contemporary Maya and Zapotec Indians, followed a tradition which originated centuries earlier. The toolkit of prehispanic times might have varied slightly from place to place and from person to person, but the basic technology was very likely the same all over Central America.

Two unfinished metates, which were found at the site of Las Mercedes (Mason, 1945: 237) give us an idea how the basic form and decoration were roughed out. In one example (ibid. pl.23c) the block of stone had clearly been shaped to outline a feline effigy metate. The body is hollowed out, and head and tail are roughed out. Two depressions on the sides appear to represent an early stage of drilled holes to separate the legs; a third depression indicates that an openwork panel was intended between the legs. The other example (ibid.pl.28b) is a rough-out of a hollowed out, circular, atlantean-supported metate.

It is clear that, for the manufacture of such elaborately modelled and decorated metates as are known from prehispanic Lower Central America, a 'metatero' would have needed an even more extensive toolkit than the one described earlier for the Maya and Zapotec Indians. The sophisticated modelling and intricate decorative work, both in low and high relief carving and openwork sculpture, required a large number of different-sized stone hammers and fine chisels, and the job of creating such metates must have been immensely demanding in time, skill and labour.

It is highly likely that some of the metates from prehispanic Lower Central America, which display notably elaborate and individual aspects both in form and decoration, were the work of specialist artisans.

CHAPTER II

TYPOLOGY AND CLASSIFICATION

DEFINING THE METATE TYPES

The basic form of the grinding top of a metate determines the way it can be used. According to criteria, which are principally functional, two basic types can be distinguished:

- SPECIAL PURPOSE METATE,
  hereafter referred to as SPM (fig..6)

and

- MULTIPURPOSE METATE,
  hereafter referred to as MPM (fig..7).

The distinguishing factor is the shape of the grinding top. The SPM has a rimless, rectangular grinding top which is curved lengthwise. It is used today, and presumably was in the past, specifically for grinding soaked corn in the fashion which is typical in Mesoamerica, where soaked corn is made into a paste and rolled out into tortillas. The term SPM is used here explicitly to describe grinding stones of this kind. It should be noted, however, that it has been used in the past by some authors when referring to 'ceremonial' metates (Graham, 1981:119; Snarskis, 1984c: 210; Lingen, 1986:176).

The MPM has a grinding top which is generally rimmed or concave or, in rare cases, rimless and flat. Its form can be either rectangular, oval or circular. It is used for grinding dry corn into flour as well as for grinding other substances and for mashing and crushing tubers and fruits, and also for pounding and pulverizing pigments and potter's clay.

To sum up, function governs form and clearly divides the SPM from the MPM.

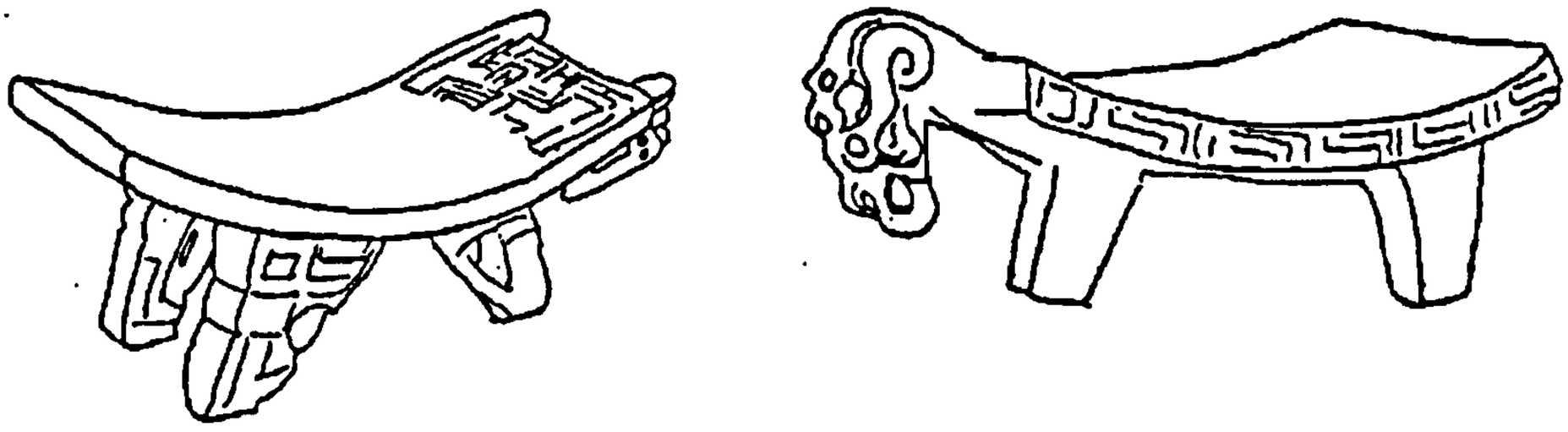


Fig. 6. Examples of *special purpose* metates

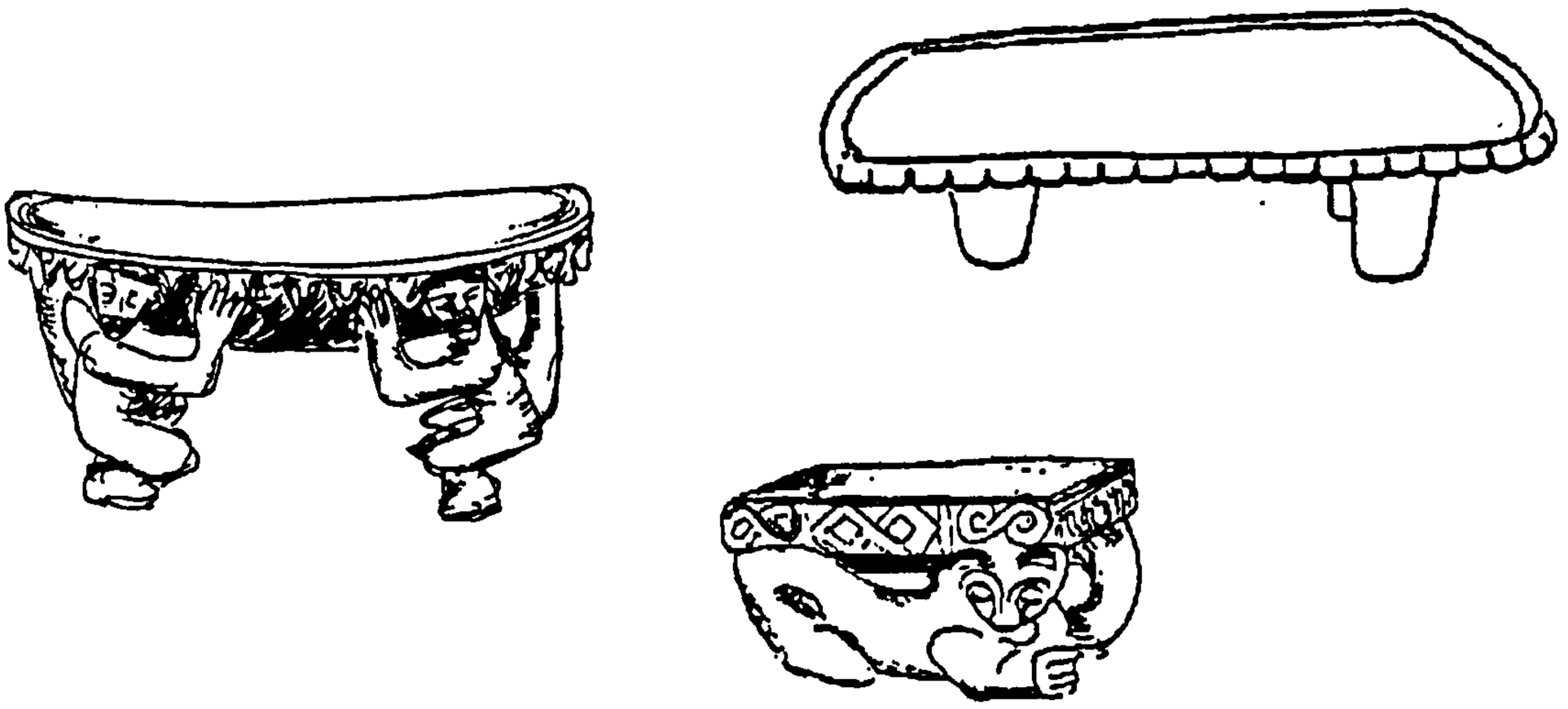


Fig. 7. Examples of *multipurpose* metates

Related to overall appearance, a further basic category can be established for both the SPM and the MPM. Many metates were carved to represent animal effigies. The difference between effigy types and non-effigy types is not only easily recognizable, but this particular feature can also have environmental and cultural associations. It seems justifiable, therefore, to use the criteria of 'non-effigy' or 'effigy' as a starting point in the classification and to distinguish the following basic subtypes:

- NON-EFFIGY SPM (special purpose metate), i.e. SPM1,
- EFFIGY SPM (special purpose metate), i.e. SPM2,
- NON-EFFIGY MPM (multipurpose metate), i.e. MPM1,
- EFFIGY MPM (multipurpose metate), i.e. MPM2.

This initial division is relatively straight-forward, whereas the next step proves considerably more complicated. In an attempt to create a useful organisation of the large variety of metates, it is necessary to select certain criteria for the demarcation of specific groups.

In my opinion, the base of the metate represents an important distinguishing factor. Metates were made with three or four legs, and some rest on pedestals while others are figural- or atlantean-supported (fig 8). I have therefore opted for the base of the metate to serve as the primary criterion. Specific decorative features and/or conspicuous appendages serve as additional criteria, and scale is considered as well.

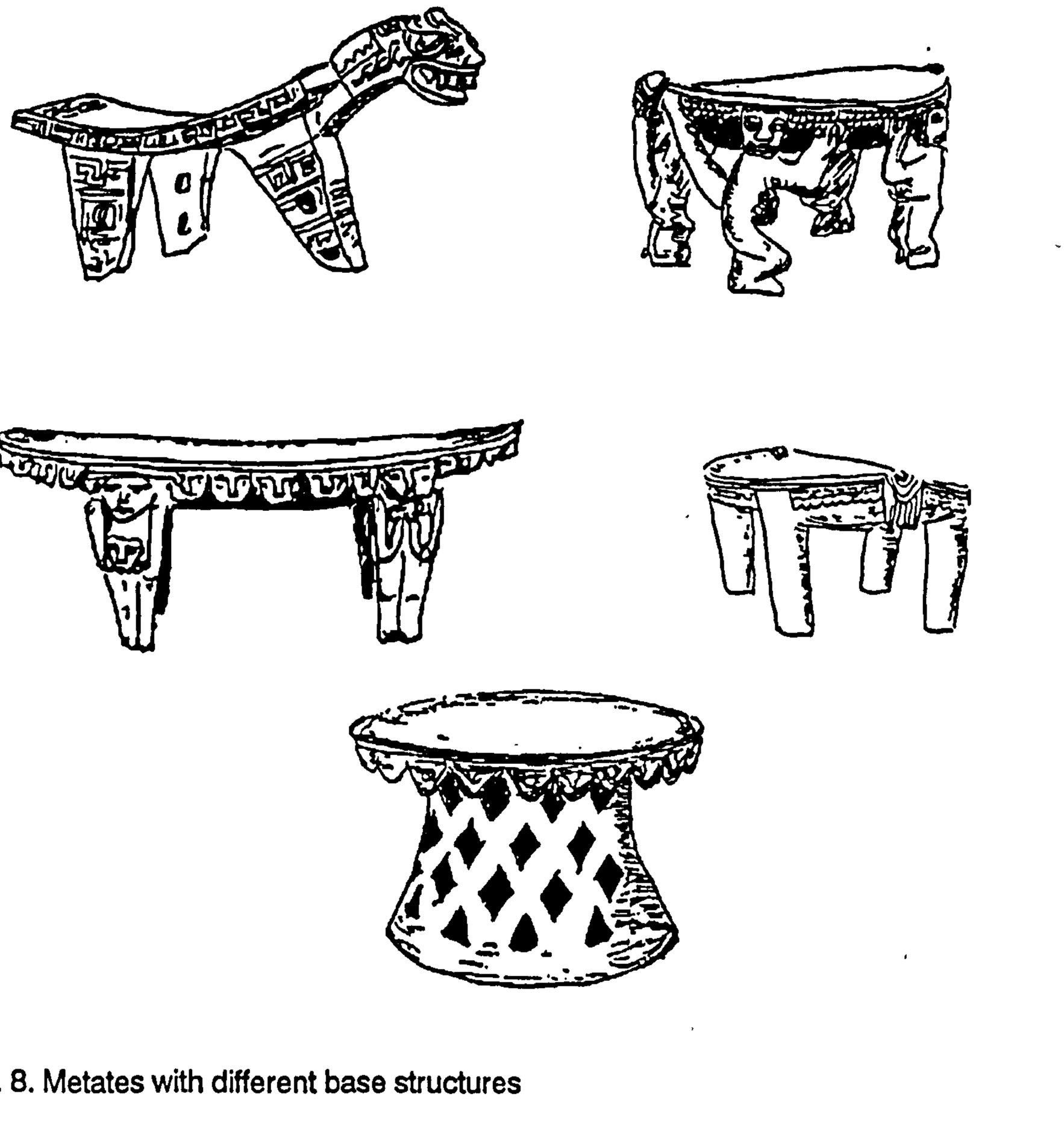


Fig. 8. Metates with different base structures

Whereas the formal distinction between the two basic metate types - SPM and MPM - is ruled unambiguously by functional aspects, the criteria for organizing the large body of decorated metates into distinct groups can be governed by stylistic features, or functional ones, or a mixture of both.

The meaning of 'stylistic' here is therefore defined as a mode of expressing particular features which are normally independent of utilitarian functions. It must be added that a clear delineation between 'functional' and 'stylistic' is often difficult since such elements frequently overlap.

As will be seen, some decorative details had almost certainly both a functional and an ornamental purpose; e.g. effigy metates often have a tail which is carved artistically and ingeniously to form a loop which links up with one of the backlegs. Apart from looking ornamental in style, the looped tail could clearly have served as a handle.

In the following text 647 decorated metates are classified. The four basic subtypes, i.e. SPM1, SPM2, MPM1 and MPM2, are dealt with individually. Groups and subgroups are defined according to the type of base supporting the metate top. A description of the general characteristics of the various groups and their varieties is then given for each defined group as well as details of distribution and chronology as far as these are known.

Recurring decorative patterns and iconographic motifs are treated in a separate stylistic analysis which is discussed in Chapter III. The recorded details and an illustration of each specimen listed in the text appear in Volume Two: Corpus of Metates.

The abbreviations used in the following text to describe the metate varieties, e.g. SPM1.L3/CON(EFF), might prove somewhat bewildering to the reader, and the Glossary in Appendix 6 is designed to serve as a helpful companion.

CLASSIFICATION

A. THE SPM1 (non-effigy special purpose metate) AND ITS VARIETIES

76 examples will be classified.

SPM1 types are relatively uniform, although the overall size can vary considerably. They all have rimless rectangular grinding plates which are curved lengthwise. Two groups of SPM1 types are defined (Fig.9), one of metates with three legs (L3), the other of metates with four legs (L4):

SPM1.L3 (75 examples)

SPM1.L4 (1 example)

SPM1 types with four legs are extremely rare, and tripods clearly represent the norm.

1. SPM1.L3: non-effigy special purpose metate with three legs

SPM1 tripods have normally conical (CON) or trapezoidal (TRA) or, very occasionally, angular (ANG) legs. Three subgroups are therefore defined:

SPM1.L3/CON (27 examples)

SPM1.L3/TRA (47 examples)

SPM1.L3/ANG (1 example)

L3	3 legs
L4	4 legs
CON	conical
TRA	trapezoidal
ANG	angular
GEO	geometric
EFF	effigy
NE	no extras
H	handles
K	knobs

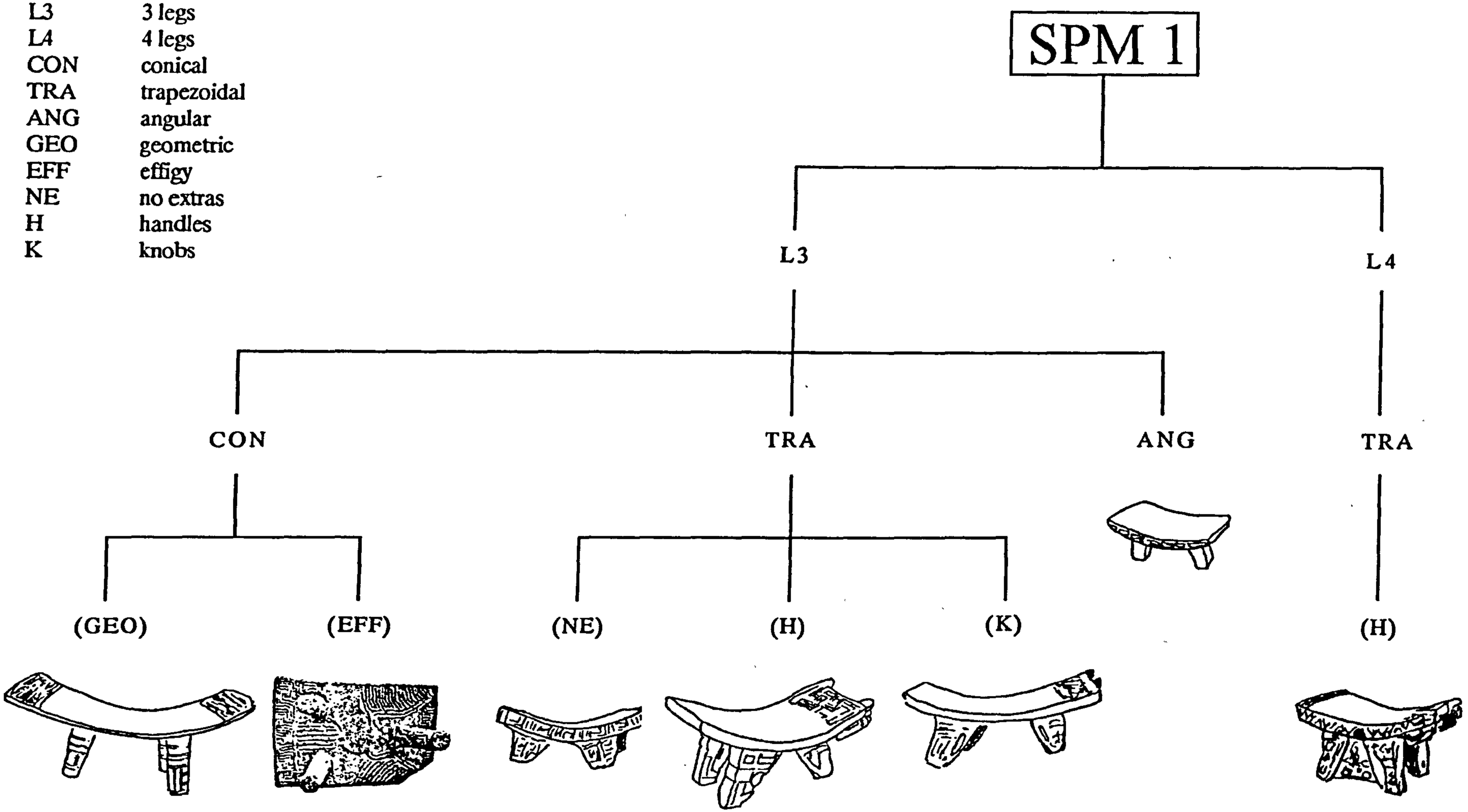


Fig. 9. The SPM1 and its varieties

The first two subgroups occur in different varieties and are therefore subdivided further on the basis of specific decorative features or appendages.

1a. SPM1.L3/CON (non-effigy special purpose metate with three conical legs)

The grinding plates of the metates in this subgroup are, in general, rather thin in proportion to their overall size. The upper side of the plate is either plain or embellished with a band of geometric motifs at each end, usually a wide band at the front and a narrower one at the back end. The underside, however, appears generally with some kind of imagery: either with a display of geometric patterns (GEO) or with anthropomorphic or zoomorphic effigies (EFF), often carved in three-dimensional fashion. The zoomorphic effigies include representations of avian, reptilian and simian creatures. Accordingly two varieties can be defined:

- SPM1.L3/CON(GEO)
- SPM1.L3/CON(EFF)

SPM1.L3/CON(GEO)

(non-effigy special purpose metate, three conical legs, geometric decoration on underside of plate)

7 Examples (in order of overall size, from smallest to largest):
237, 479, 2, 230, 3, 1, 4 (see VOL. TWO, pages 5-11).

GRINDING TOP

Form:	*rec*tangular, rimless, curved lengthwise.
Size:	***length*** varies from 35 to 80 cm, ***width*** varies from 20 to 46 cm.
Decoration:	***top*** has generally a geometric pattern carved in low-relief at both ends; ***underside*** is also decorated with geometric or interlaced patterns. ***Rim*** is unadorned.

BASE

Form:	3 conical legs.
Size:	varies from approx. 10 to 35 cm.
Decoration:	mostly with encircling and vertical grooves.

Distribution: Greater Nicoya, c. AD 1-700.

Reported sites:

Burial VIII at Las Huacas nr. Nicoya, Costa Rica, AD 300-500 (Hartman, 1907:pl.VI,figs.1,2, and pl.VII,fig.1; Fonseca and Richardson, 1978), incl. example 230.

La Guinea, Tempisque River Valley, Guanacaste, Costa Rica, AD 500-700 (Baudez, 1967:181).

Isthmus of Rivas, Nicaragua, AD 300-500 (Healy, 1980:276)

Matina nr. Santa Cruz, Guanacaste, Costa Rica (Lehmann, 1909), incl. examples 479 and 1.

SPM1.L3/CON(EFF)

(non-effigy special purpose metate, three conical legs, effigies carved into underside of plate)

20 Examples (in order of overall size, from smallest to largest):

245, 246, 234, 244, 248, 480, 243, 247, 231, 235, 233, 48*, 250, 232, 249, 240, 241, 238, 239, 236 (see VOL. TWO, pages 12-31).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise.

Size: *length* varies from 34 to 98 cm, *width* varies from 22.5 to 55 cm.

Decoration: *top* has sometimes a geometric pattern carved in low-relief at both ends; *underside* displays carved effigies of naturalistic or stylized anthropomorphic or zoomorphic figures, occasionally with head or limbs incorporated three-dimensionally into the metate base. *Rims* are unadorned.

BASE

Form: 3 conical legs.

Size: varies from approx. 10 to 45 cm.

Decoration: sometimes encircling or linear grooves, or other geometric patterns; some legs represent the head or limbs of figures which are carved into the underside of the metate.

(* Example 48 is an anomaly with a totally flat and sub-rectangular top)

Distribution: Greater Nicoya, c.AD 1-500.

Reported sites:

Burials I and VIII at Las Huacas nr. Nicoya, Costa Rica, AD 300-500 (Hartman, 1907:pl.IV,figs.1,2,; pl.V,fig.1; pl.VIII,figs.1,2; Fonseca and Richardson, 1978), incl. example 250 from burial I and example 231 from burial VIII; also reportedly from Las Huacas are examples 245, 246, 234, 247, 248, 235, 233, 232 and 249.

Nosara, Nicoya Peninsula, Costa Rica, AD 1-500 (Lange, 1976; Snarskis, 1981b:180), incl. probably example 239.

Example 244 reportedly from Santa Cruz, Guanacaste (Snarskis, 1981b:180).

Example 241 reportedly from Filadelfia, Tempisque River Valley, Guanacaste (Stone, 1977:48).

1b. SPM1.L3/TRA (non-effigy special purpose metate with three trapezoidal legs)

Metates in this subgroup are characterized by the curious shape of their three legs. They are modelled in trapezoidal form, carved generally in openwork fashion with oblong and/or circular slits and embellished with incised geometric motifs. Some are reminiscent of birdheads with long beaks and others appear to represent human effigies. It has been suggested that some of the elaborately carved legs represent stylized images of squatting monkeys upside-down and with tails erect (Hartman, 1907:41, 46; Graham, 1981:115). However, in general, they seem more human than simian. Another interpretation suggests that they are human figures, head downwards and feet linked to the metate, with an alter-ego motif on their back in the form of a crocodile or, sometimes, a feline or avian creature (Pfeiffer, 1991). Perhaps the main reason for the slit legs was a purely functional one: they may have served to tie the metate to a wall or another solid object in order to keep it steady during the grinding process.

Most SPM1 metates with trapezoidal legs have either two knobs or appendages like handles protruding from the front end or front sides of the grinding plate. The knobs are usually solid, but appear sometimes as miniature zoomorphic heads. The handle-like appendages are generally carved in openwork fashion, with one or two circular holes, or with an oblong slit. The form of these 'handles' is often suggestive of birdheads. Alternatively, the 'handles' could indeed have served as a functional element. Perhaps the metates, when not in use, were tied up against a wall, upright on their back legs, with the underside showing. This could explain why the majority of SPM1 type metates are elaborately decorated on the underside.

Three varieties can thus be defined, depending on whether metates with trapezoidal legs have 'handles' (H) or 'knobs' (K) attached to the front end of the grinding plate or appear with neither:

- SPM1.L3/TRA(H)
- SPM1.L3/TRA(K)
- SPM1.L3/TRA

SPM1 metates with trapezoidal legs, but without either knobs or handles attached to the grinding plate, are extremely rare.

SPM1.L3/TRA(H)

(special purpose metate, three trapezoidal legs, two handle-like appendages at front end of plate)

37 Examples (in order of size, from smallest to largest):

16, 13, 254, 611, 7, 17, 251, 252, 613*, 14, 11, 18, 20, 483, 5, 486, 572, 6, 253, 260, 9, 255, 637, 256, 261, 484, 259, 258, 485, 481, 23, 487, 262, 8, 10, 257, 263 (see VOL. TWO, pages 32-68).

GRINDING TOP

Form:	rectangular, rimless, curved lengthwise, with two handle-like appendages attached to the sides underneath the front end.
Size:	***length*** varies from 32 to 72 cm, ***width*** varies from 16.5 to 32 cm.
Decoration:	The front end of the ***top*** is generally decorated with a wide band of geometric design carved in low-relief; the back end is often plain or decorated only with a narrow band in geometric pattern. The ***underside*** is generally carved with linear motifs, sometimes interlaced banding reminiscent of basketry patterns. Those grinding plates which are relatively solid display frequently geometric decorations on the ***rim*** along the sides; the thinner plates have usually plain rims.

BASE

Form:	3 legs shaped trapezoidally and carved in openwork fashion, sometimes suggestive of inverted squatting figures.
Size:	varies from approx. 13 to 35 cm.
Decoration:	generally carved in openwork fashion, with oblong and circular perforations and decorated with linear and curvilinear motifs in low-relief.

(* 613 represents an anomaly; the appendage at the front end of the plate is in form of a single large handle with the opening carved in the shape of a half-cross.)

Distribution: Greater Nicoya, c.AD 300-800.

Reported sites:

Burial XI at Las Huacas nr. Nicoya, Costa Rica, AD 300-600 (Hartman, 1907:pl.IX,figs.1-4; Fonseca and Richardson, 1978) incl. example 251; also reportedly examples 254, 252, 253.

Monte del Barco, Bay of Culebra, Costa Rica, c. AD 800-1000 (Accola and Ryder, 1980:75), including reportedly example 262.

San Juan, Isthmus of Rivas, Nicaragua (Lehmann, 1909), incl. examples 6 and 8.

La Libertad, Chontales region, Nicaragua (Boyle, 1866:44), incl. example 23.

La Guinea, Tempisque River Valley, Guanacaste, Cost aRica, AD 500-1000 (Baudez, 1967:181).

SPM1.L3/TRA(K)

(non-effigy special purpose metate, three trapezoidal legs, two large knobs at front end of plate)

9 Examples (in order of overall size, from smallest to largest):

612, 19, 21, 264, 12, 24, 15, 488, 22 (see VOL. TWO, pages 69-77).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with two solid knobs appended to the front end.

Size: *length* varies from 32.5 to 69 cm and *width* from 18 to 33 cm.

Decoration: The front end of the *top* is generally decorated with a wide band in geometric design, carved in low-relief; the back end is often plain or decorated only with a narrow band of geometric pattern. The *underside* is generally carved with linear motifs, sometimes with interlaced bands suggesting basketry designs. The more solid grinding plates display geometric decorations on the *rim* along the sides; but more often plates are relatively thin with plain *rim*s.

BASE

Form: 3 legs in trapezoidal shape and carved in openwork fashion; sometimes suggestive of inverted squatting figures.

Size: varies from approx. 14 to 34 cm.

Decoration: generally carved in openwork fashion with oblong and circular perforations and decorated with linear and curvilinear motifs in low-relief.

Distribution: Greater Nicoya, c.AD 300-1000.

Reported sites:

Nacascolo, Bay of Culebra, Costa Rica, AD 300-600 (Snarskis, 1981b:190).

Matina nr. Santa Cruz, Guanacaste (Lehmann, 1909) incl. example 15.

La Libertad, Chontales region, Nicaragua (Boyle, 1866:44) incl. examples 22 and 24.

SPM1.L3/TRA

(non-effigy special purpose metate, three trapezoidal legs)

1 Example: 242 (see VOL. TWO, page 78).

Cuenca de Arenal, Guanacaste, c.AD 600-1000 (Chenault, 1984:170) incl. example 242.

1c. SPM1.L3/ANG (non-effigy special purpose metate with three angular legs)

The legs of metates in this subgroup are short, solid and carved in angular shape. The only decoration occurs on the rim of the grinding plate, usually a linear pattern carved in low-relief.

The sample here is confined to a single specimen, which does not necessarily mean, however, that tripod metates with angular legs are rare. Perhaps, due to their relatively plain look, such examples may not have been collected. Known examples of effigy metates in the parallel group (SPM2.L3/ANG) are, on the other hand, fairly numerous.

SPM1.L3/ANG

(non-effigy special purpose metate, three angular legs)

1 Example: 628 (see VOL. TWO, page 79).

GRINDING TOP

Form: rectangular, rimless, slightly curved lengthwise.

Size: *length* approx. 40 cm, *width* approx.. 25 cm.

Decoration: linear pattern carved in low-relief on *rim* along the sides.

BASE

Form: 3 short, sturdy legs, carved in angular shape.

Size: approx. 12-13 cm.

Decoration: none.

Distribution: Northern Zone, AD 1000-1500.

Reported site:

Cocobila, Laguna de Ibans, NE Honduras, AD 1000-1500 (Clark et al., 1983:40) incl. example 628.

2. SPM1.L4: non-effigy special purpose metate with four trapezoidal legs

Four-legged SPM1 specimens are extremely rare, and it is perhaps arguable whether they constitute a separate group. In my sample there is only one single such metate, with trapezoidally-shaped (TRA) legs. However, within the SPM2 (effigy) category there are five four-legged specimens which display similar features to the SPM1 example. In both cases these features are unusual amongst SPM types, not only for the fact that they are four-legged but also because of the panels between the legs with effigies carved in openwork fashion.

The example here has 'handles' protruding from the front end of the grinding plate and therefore belongs to the SPM1.L4/TRA(H) variety.

SPM1.L4/TRA(H)

(special purpose metate, four trapezoidal legs, two handle-like appendages at front end of grinding plate)

1 Example: 489 (see VOL. TWO, page 80).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with two handle-like appendages attached to the sides underneath the front end.

Size: *length* approx. 28 cm; *width* approx. 16 cm.

Decoration: front and back end of the *top* decorated with bands of geometric design carved in low-relief. *Underside* is plain. The *rim* is embellished with geometric decorations in low-relief.

BASE

Form: 4 legs shaped trapezoidally and carved in openwork fashion.

Size: approx. 14 cm.

Decoration: carved in openwork fashion, with perforations, and decorated with linear and curvilinear motifs in low-relief. The front and back legs are linked by a panel carved in openwork fashion with stylized effigies.

Distribution: probably Greater Nicoya, approx. AD 500-1000, by comparison with specimens of the SPM2.L4 group which share similar characteristics.

Reported sites: none.

B. THE SPM2 (effigy special purpose metate) AND ITS VARIETIES

107 examples will be classified.

SPM2 types have zoomorphic heads attached to the front end of the grinding plate, and it is therefore assumed that they were intentionally made to represent animal effigies. Heads of birds, felines, canids and reptiles can be identified. Mostly these are modelled naturalistically, although some representations are stylized, and a few are not clearly defined. In general, the heads are forward looking, although a few are turned sideways. When the latter occurs on a bird head with a long beak, it looks as if the maker deliberately carved it in this way in order to form a handle with the beak. Even straight-forward looking bird heads often have their long beaks curved around and joined to the neck or metate plate and so forming a 'handle' or a loop for tying the metate to a wall or to some solid object. Most SPM2 types are large in overall size.

As is usual with all SPM metates, SPM2 types have the standard grinding top form, i.e. a rimless rectangular plate which is curved lengthwise.

Two groups of SPM2 types can be distinguished, i.e. those with <u>three legs</u> (L3) and those with <u>four legs</u> (L4) :

SPM2.L3 (102 examples) and
SPM2.L4 (5 examples).

As is the case with the SPM1 (non-effigy) types, four-legged specimens are rare also in this category, and tripods clearly represent the norm (fig. 10).

L3	3 legs	SOL	solid
L4	4 legs	AVI	avian
CON	conical	CAN	canid
TRA	trapezoidal	FEL	feline
ANG	angular	BOX	box-shaped
FSL	fruit slice	REP	reptile
OFR	open fretwork	ZOO	zoomorphic

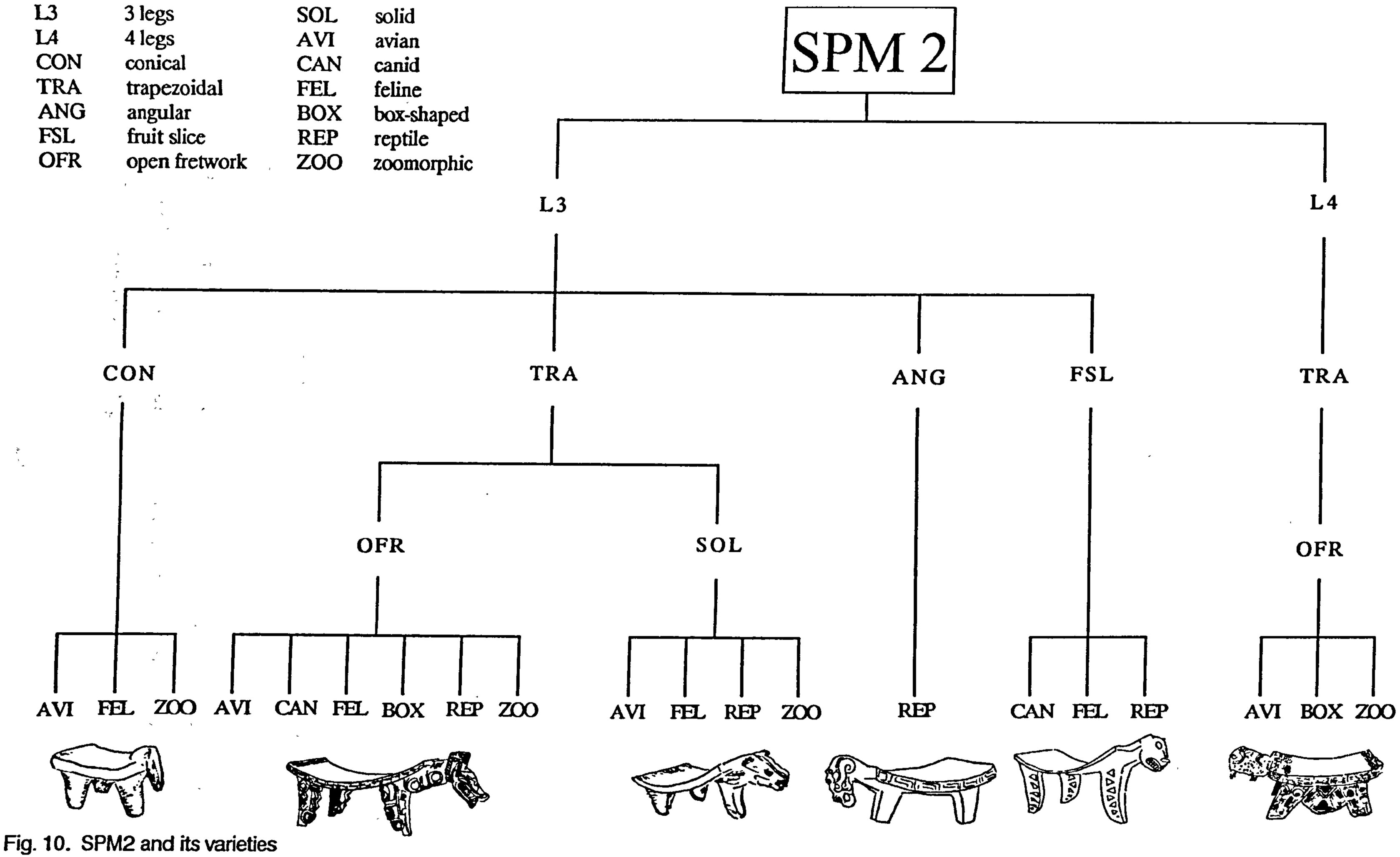


Fig. 10. SPM2 and its varieties

1. SPM2.L3: effigy special purpose metate with three legs

Within this category the majority have legs in trapezoidal (TRA) form, but there is also a small group with angular (ANG) legs, another with legs shaped like a tropical fruit slice (FSL) and a very small group with conical (CON) legs. Based on this variety of leg forms, the following subgroups are defined:

SPM2.L3/CON (3 examples)

SPM2.L3/TRA (70 examples)

SPM2.L3/ANG (18 examples)

SPM2.L3/FSL (11 examples)

The TRA subgroup is further arranged according to differing aspects of the legs, i.e. whether they are solid (SOL) or carved in open fretwork (OFR) fashion, and all the categories are further subdivided depending on the variety of effigy represented.

1a. SPM2.L3/CON (effigy special purpose metate with three conical legs)

Conical legs are rare amongst SPM2 tripods and, consequently, this subgroup is very small. Compared to other SPM2.L3 types, the specimens with conical legs are rather crudely executed, without any decorative features apart from the effigy head. Also, they are the only metates within the SPM class with grinding tops which are not strictly rectangular in form, but have the back ends slightly rounded.

Although each metate in this small subgroup has a different effigy head, the overall characteristics are shared by all specimens, and they are therefore listed here in a collective description.

SPM2.L3/CON(AVI)

(bird effigy special purpose metate with three conical legs)

1 Example: 575 (see VOL. TWO, page 81).

SPM2.L3/CON(FEL)

(feline effigy special purpose metate with three conical legs)

1 Example: 609 (see VOL. TWO, page 82).

SPM2.L3/CON(ZOO)

(unidentified zoomorphic effigy special purpose metate with three conical legs)

1 Example: 49 (see VOL. TWO, page 83).

GRINDING TOP

Form: sub-rectangular, rimless, curved lengthwise, with an effigy head at the front end.

Size: *overall length* varies from 29 to 40 cm; *width* varies from 19.5 to 30 cm.

Decoration: a zoomorphic effigy head is naturalistically carved at the front end of the grinding plate. There are no additional embellishments.

BASE

Form: 3 conical legs.

Size: varies from approx. 10 to 16 cm.

Decoration: none.

Distribution: Northern Zone, c. AD 800-1550.

Reported site:

Agua Escondida, nr. Guajiquiro, SW Honduras (Stone, 1957:111), incl. example 49.

1b. SPM2.L3/TRA (effigy special purpose metate with three trapezoidally shaped legs)

The curious aspect of the TRA leg has been discussed earlier (see page 39). The majority of metates in the SPM2.L3/TRA subgroup have legs carved in open fretwork fashion (OFR). Out of 70 examples only 7 specimens differ and have solid legs (SOL). A distinction is therefore made between:

SPM2.L3/TRA/OFR and
SPM2.L3/TRA/SOL.

The metates in the SPM2.L3/TRA/OFR category have grinding tops which are generally decorated with a band of geometric motifs carved in low-relief at each end, usually a wide band at the front end and a narrower one at the back end. The undersides of these metates are sometimes embellished with geometric patterns, but more often they remain undecorated.

Within the TRA/OFR category effigy heads of the following animals can be recognized: birds (AVI), canids (CAN), felines (FEL) and reptiles (REP). There is also a variety with box-shaped heads (BOX) and another with effigy heads of unidentifiable zoomorphic (ZOO) creatures. Accordingly the following subgroups are defined:

- SPM2.L3/TRA/OFR(AVI)
- SPM2.L3/TRA/OFR(CAN)
- SPM2.L3/TRA/OFR(FEL)
- SPM2.L3/TRA/OFR(BOX)
- SPM2.L3/TRA/OFR(REP)
- SPM2.L3/TRA/OFR(ZOO)

In my corpus the most frequent representation is that of birds (21 examples). Various tropical species can be recognized including macaws, harpy eagles, toucans, curassows and ibis.

The box-shaped heads (9 examples) appear to have feline characteristics and, if therefore added to the 7 actual feline effigies - all seemingly depicting jaguars -, they are the second most common animal represented (16 examples).

In third place of frequency are the coyotes which belong to the canid family (14 three-legged examples). The heads in this group are hollowed out and spectacularly carved in 'filigree' fashion.

The reptiles follow next (10 examples); among this variety we can find alligators, lizards and snakes, with the majority carved in 'filigree' fashion.

Two specimens are not identifiable.

SPM2.L3/TRA/OFR(AVI)

(bird effigy special purpose metate with three trapezoidally shaped legs carved in open fretwork fashion)

21 Examples (in order of overall size, from smallest to largest):

26, 273, 29, 27, 269, 30*, 266, 267, 270, 515, 28, 275, 512, 31, 272, 25, 271, 513, 268, 265, 511 (see VOL. TWO, pages 84-104).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a solid bird head at the front end.

Size: *overall-length* varies from 30 to 82 cm; *length* of the actual grinding plate varies from approx.25 to 75 cm; *width* varies from 16 to 32 cm.

Decoration: a bird head is carved naturalistically into the front part of the grinding plate, mostly forward looking, but occasionally arranged sideways and, when carved in openwork fashion, forming a 'handle' (examples 273 and 30). The *top* of the grinding plate is usually decorated in low-relief with a geometric pattern at both the front and back end; occasionally the *undersides* are embellished with geometric motifs, but more often they are plain. The *rims* along the sides of the plates are usually decorated with geometric patterns.

BASE

Form: three legs shaped trapezoidally and carved in open fretwork fashion.

Size: varies from approx. 8 to 32 cm.

Decoration: generally carved in open fretwork fashion with circular and oblong perforations and decorated in low-relief with linear and curvilinear motifs.

(* Example 30 has an unusual feature: a human head is carved into the birdhead/handle.)

Distribution: Greater Nicoya, c. AD 300-800.

Reported sites:

Isla Chira, Gulf of Nicoya (Lehmann, 1909) incl. example 26.

Nosara, Guanacaste (Baudez, 1970:fig. 74) incl. example 268.

Isthmus of Rivas, Nicaragua, AD 300-800 (Healy, 1980:276).

SPM2.L3/TRA/OFR(CAN)

(canid effigy special purpose metate with three trapezoidally shaped legs carved in open fretwork fashion)

14 Examples (in order of overall size, from smallest to largest):

33, 291, 288, 500, 492, 498, 497, 494, 499, 491, 490, 640, 289, 284 (see VOL. TWO, pages 105-118).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a hollow canid head at the front end carved in 'filigree' fashion; in general, grinding plates are relatively thin.

Size: ***overall-length*** varies from 44 to 105 cm; ***length*** of the actual grinding plate varies from approx. 34 to 80 cm; ***width*** varies from 20 to 39 cm.

Decoration: a canid head, generally of a coyote, protrudes from the front end of the grinding plate, carved in 'filigree' fashion and often embellished in a most spectacular way. Some heads display unusual aspects such as nose and ears of the animal being represented by lizards. The necks, which reach underneath the grinding plate are also prominently modelled in 'filigree' style and decorated with geometric patterns. The ***top*** of the grinding plate is usually decorated in low-relief with a geometric pattern at both the front and back ends; on the whole the ***underside*** is plain. The ***rims*** along the sides of the plates are usually decorated with geometric patterns, most frequently with a stepped-fret motif.

BASE

Form: three legs shaped trapezoidally and carved in open fretwork fashion.

Size: varies from approx. 14 to 38 cm.

Decoration: generally carved in open fretwork fashion with circular and oblong perforations and decorated in low-relief with linear and curvilinear motifs. The majority display outstandingly fine and skilful 'filigree' work.

Distribution: Greater Nicoya, probably c. AD 300-700, by comparison with other specimens of the SPM2.L3/TRA/OFR group which share similar characteristics.

Reported sites: none.

SPM2.L3/TRA/OFR(FEL)

(feline effigy special purpose metate with three trapezoidally shaped legs carved in open fretwork fashion)

7 Examples (in order of overall size, from smallest to largest):

278, 282, 292, 281, 501, 504, 503 (see VOL. TWO, pages 119-125).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a feline head at the front end.

Size: ***overall-length*** varies from 50 to 84 cm; ***length*** of the actual grinding plate varies from approx. 36 to 63 cm; ***width*** varies from 20.5 to 36 cm.

Decoration: a feline head protrudes from the front end of the grinding plate. Generally the heads are carved naturalistically with the upper part solid and the jaw part hollowed out. Necks are prominent, mainly solid and embellished with geometric patterns. The *top* of the grinding plate is usually decorated in low-relief with a geometric pattern at both the front and back ends; the *undersides* are sometimes embellished with linear motifs. The *rims* along the sides of the plates are usually decorated with geometric patterns.

BASE

Form: three legs shaped trapezoidally and carved in open fretwork fashion.

Size: varies from approx. 12.5 to 35 cm.

Decoration: generally carved in open fretwork fashion with circular and oblong perforations and decorated in low-relief with linear and curvilinear motifs. Some display skilful 'filigree' work.

Distribution: Greater Nicoya, probably c. AD 300-700, by comparison with other specimens of the SPM2.L3/TRA/OFR group which share similar characteristics.

Reported sites: none.

SPM2.L3/TRA/OFR(BOX)

(effigy special purpose metate with a box-shaped head, three trapezoidal legs carved in open fretwork fashion)

9 Examples (in order of overall size, from smallest to largest):

507, 505, 646, 38, 39, 36, 279, 37, 280 (see VOL. TWO, pages 126-134).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a box-shaped feline head protruding from the front end.

Size: ***overall-length*** varies from 39 to 77 cm; ***length*** of the actual grinding plate varies from approx. 30 to 60 cm; ***width*** varies from 18 to 30 cm.

Decoration: a box-shaped feline head protrudes from the front end of the grinding plate. Generally the heads are forward looking and carved with the upper part solid and the jaw region hollowed out. The heads are often decorated with linear or curvilinear motifs. Occasionally a head is turned sideways. Necks are mainly solid. In general the ***top*** of the grinding plate is decorated in low-relief with a geometric pattern at both the front and back ends; the ***undersides*** are sometimes embellished with linear motifs. The ***rims*** along the sides of the plates are usually decorated with geometric patterns.

BASE

Form: three legs shaped trapezoidally and carved in open fretwork fashion.

Size: varies from approx. 18 to 35 cm.

Decoration of legs: generally carved in open fretwork fashion with circular and oblong perforations and decorated in low-relief with linear and curvilinear motifs.

Distribution: Greater Nicoya, probably c. AD 300-700, by comparison with other specimens of the SPM2.L3/TRA/OFR group which share similar characteristics.

Reported site: none.

SPM2.L3/TRA/OFR(REP)

(reptilian effigy special purpose metate with three trapezoidally shaped legs carved in open fretwork fashion)

10 Examples (in order of overall size, from smallest to largest):

274*, 286, 290, 35, 496*, 276, 506, 283, 298, 493 (see VOL. TWO, pages 135-144).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a reptilian head at the front end.

Size: *overall-length* varies from 40 to 87 cm; *length* of the actual grinding plate varies from approx. 33 to 60 cm; *width* varies from 16.5 to 32 cm.

Decoration: a reptilian head, generally of an alligator, but sometimes of a snake or a lizard, protrudes from the front end of the grinding plate. Alligator heads are mostly hollow and often carved in spectacular 'filigree' fashion with features modelled in careful detail; especially teeth are prominently shown. Snake and lizard heads are generally solid, or just with the lower part hollowed out. The *top* of the grinding plate is usually decorated in low-relief with a geometric pattern at both the front and back ends; on the whole the *underside* is plain. The *rims* along the sides of the plates are usually decorated with geometric patterns, often with a meander band.

BASE

Form: three trapezoidal legs, carved in open fretwork fashion.

Size: varies from approx. 14 to 30 cm.

Decoration: generally carved in open fretwork fashion with circular and oblong perforations and decorated in low-relief with linear and curvilinear motifs. Many display fine 'filigree' work.

(* Examples 274 and 496 represent anomalies: their front legs actually form the head of the effigy metate. The head-cum-frontleg of 496 is modelled with particularly elaborate openwork detail and has a snake protruding from the alligator's mouth in order to reach the height of the other two legs.

Distribution: Greater Nicoya, c. AD 300-700.

Reported sites:

Naranjal de Nicoya, Guanacaste (Snarskis, 1981b:190).

Potreros, Guanacaste (Mus. of. Am. Indian, N.Y, ref. Jorge A. Lines) incl. example 506.

SPM2.L3/TRA/OFR(ZOO)

(unidentified zoomorphic effigy special purpose metate with three trapezoidally shaped legs carved in open fretwork fashion)

2 Examples:

40 (overall length: 33 cm) and 509 (overall length: 42 cm) (see VOL. TWO, pages 145-146).

All the metates in the SPM2.L3/TRA/SOL category have solid legs carved in vaguely trapezoidal form. However, the legs differ from those in the TRA/OFR groups to a certain extent not only in form - some legs have an almost ellipsoidal look - but also in their sturdiness.

In contrast to the TRA/OFR groups, the grinding tops and undersides of the metates in the TRA/SOL category are generally plain.

The zoomorphic effigy heads in this category are not as clearly defined as those in the TRA/OFR group. However, in my sample, heads of the following animals can be recognized: birds (AVI), felines (FEL) and reptiles (REP); one example is unidentifiable (ZOO).

Accordingly four varieties are defined:

- SPM2.L3/TRA/SOL(AVI)
- SPM2.L3/TRA/SOL(FEL)
- SPM2.L3/TRA/SOL(REP)
- SPM2.L3/TRA/SOL(ZOO)

The sample represented in this category is relatively small, and although the heads differ considerably, the general characteristics of grinding tops and legs are largely shared by the four varieties and are therefore listed here in one collective description.

SPM2.L3/TRA/SOL(AVI)

(avian effigy special purpose metate with three solid trapezoidally shaped legs)

2 Examples: 514, 277* (see VOL. TWO, pages 147-148).

SPM2.L3/TRA/SOL(FEL)

(feline effigy special purpose metate with three solid trapezoidally shaped legs)

3 Examples (in order of overall size, from smallest to largest):
607, 305, 610 (see VOL. TWO, pages 149-151).

SPM2.L3/TRA/SOL(REP)

(reptilian effigy special purpose metate with three solid trapezoidally shaped legs)

1 Example: 510 (see VOL. TWO, page 152).

SPM2.L3/TRA/SOL(ZOO)

(unidentified zoomorphic effigy special purpose metate with three solid trapezoidally shaped legs)

1 Example: 41 (see VOL. TWO, page 153).

(SPM2.L3/TRA/SOL continued)

GRINDING TOP

Form: rectangular, rimless, curved lengthwise, with a solid zoomorphic head protruding from the front end.

Size: *overall-length* varies from 39 to 65 cm; *length* of the actual grinding plate varies from approx. 35 to 60 cm; *width* varies from 20 to 34.5 cm.

Decoration: a zoomorphic head protrudes from the front end of the grinding plate. Generally the heads are modelled in realistic fashion without additional embellishments. *Tops* and *undersides* of grinding plates are undecorated. By and large the grinding plates are fairly solid and the *rims* along the sides of the plates remain unadorned.

BASE

Form: three solid legs carved in trapezoidal or ellipsoidal form.

Size: generally short varying from approx. 8 to 14 cm.

Decoration: none.

(* Example 277 is the only specimen with the grinding plate decorated above and below. It is also the only one with an extremely small effigy head, in this case representing a bird.)

Distribution: Northern Zone and Greater Nicoya, c. AD 500-1000.

Reported sites:

Barburata Island, Bay Islands, Honduras (Strong, 1935:86) incl. example 514.

Los Andes, Rio Sico Valley, northeastern Honduras (Stone, 1941:39).

Tenampua, SE of Comayagua, central Honduras (Stone, 1957:53)

Example 607 reportedly from Lago de Masaya area, Nicaragua (Vincent Collection).

1c. SPM2.L3/ANG (effigy special purpose metate with three angularly shaped legs)

This is a relatively small and uniform group of SPM2 types. The grinding plates are generally sizable and solid, supported by three short, sturdy and angularly shaped legs. A few examples in this group have extremely long legs and are reminiscent of high tripod metates known from Late Classic and Post-Classic southeastern Mesoamerica. The latter, however, are always non-effigy metates without any decorations in contrast to those from Lower Central America.

The effigy heads carved at the front end of the grinding plates are always finely executed and appear to represent a stylized version of a reptilian (REP) creature with a mixture of alligator and snake features. Often there is a circular opening (perforation) where the tongue emerges from the mouth curling upwards and forming a loop. This could have served as a device for tying up the metate to a wall when not in use, in a similar way to the 'handles' of the metates belonging to the non-effigy SPM1.L3/TRA(H) variety.

Apart from the carefully modelled head, the only other embellishments appear on the rims along the sides of some of the grinding plates.

One single variety only is defined in this category, since all specimens represent reptilian effigies.

SPM2.L3/ANG(REP)

(reptilian effigy special purpose metate with three angularly shaped legs)

18 Examples (in order of overall size, from smallest to largest):

608, 303, 302, 304, 478, 34*, 300, 301, 632, 368, 519, 638, 516, 517, 42, 616, 518, 43 (see VOL. TWO, pages 154-171).

GRINDING TOP

Form: Solid, rectangular, rimless, curved lengthwise, with a reptilian head at the front end; the head is generally solid.

Size: *overall-length* varies from 47 to 120 cm; *length* of the actual grinding plate varies from approx. 36 to 90 cm; *width* varies from 18 to 50 cm.

Decoration: a reptilian head, generally a stylized representation with features of both alligator and snake, elegantly modelled and finely executed. Often a long tongue emerges from the mouth carved in a way to curl round and upwards, resting on the nose and thereby forming a circular loop. The *top* and the *underside* of the grinding plate are unadorned, but the *rims* along the sides of the plate are often decorated with a meander band.

BASE

Form: three solid legs, generally short and angular.

Size: varies from approx. 8 to 40 cm.

Decoration: none.

(*Example 34 has a lizard effigy head; also the grinding plate of this specimen is unusually thin.)

Distribution: Northern Zone, c. AD 800-1550.

Reported sites:

Las Vegas, Comayagua Valley, central Honduras (Stone, 1957:16), incl. examples 303, 304.

Tigre Island, Bay of Fonseca, southern Honduras (Stone, 1957:101), incl. example 300.

Quelepa, El Salvador (Longyear, 1944:pl. XII/10).

Tonjagua, Agalta Valley, northeastern Honduras (Stone, 1941:21), incl. example 638.

Example 42 is reportedly from the vicinity of La Ceiba, northwestern Honduras (Mus. of the American Indian, New York).

Rio Claro, Dept.Colon, northeastern Honduras (Healy, 1978:15).

1d. SPM2.L3/FSL (effigy special purpose metate with three legs in form of a large tropical fruitslice)

This category of effigy metates consists of a small group with legs carved in openwork fashion and shaped curiously in form of a large slice of tropical fruit (such as a watermelon), hence FSL for 'fruitslice'.

In general the top and underside of the grinding plates are plain; out of a sample of 11 specimens 2 only have bands of geometric patterns carved in low-relief at the front and back ends of the grinding plates.

The overall size of these metates is large, and the effigy heads can be identified as canid (CAN), feline (FEL) and reptilian (REP). Three varieties are therefore defined:

- SPM2.L3/FSL(CAN)
- SPM2.L3/FSL(FEL)
- SPM2.L3/FSL(REP)

The sample represented in this category is relatively small (3 CAN, 4 FEL including 1 anomaly with two heads, 4 REP) and, apart from the variation in effigy heads, the general features of grinding top and base are largely shared by the three varieties. They are therefore listed here in one collective description.

SPM2.L3/FSL(CAN)

(canid effigy special purpose metate with three 'fruitslice' legs)

3 Examples (in order of overall size, from smallest to largest):

296, 297, 622. (see VOL. TWO, pages 172-174).

SPM2.L3/FSL(FEL)

(feline effigy special purpose metate with three 'fruitslice' legs)

4 Examples (in order of overall size, from smallest to largest):

482*, 295, 294, 293 (see VOL. TWO, pages 175-178).

SPM2.L3/FSL(REP)

(reptilian effigy special purpose metate with three 'fruitslice' legs)

4 Examples (in order of overall size, from smallest to largest):

299, 32, 623, 508 (see VOL. TWO, pages 179-182).

GRINDING TOP

Form:	rectangular, rimless, curved lengthwise, with a solid canid, feline or reptilian head carved realistically at the front end.
Size:	***overall-length*** is comparatively large and varies from 41.5 to 111 cm; ***length*** of the actual grinding plate varies from approx. 38 to 80 cm; ***width*** varies from 23 to 40.5 cm.
Decoration:	a canid, feline or reptilian head protrudes from the front end of the grinding plate. Both head and neck are generally solid and modelled in naturalistic style. Occasionally the ears appear carved in form of miniature monkeys or feline heads. The ***top*** of the grinding plate is generally plain, but can appear decorated with a band of linear motifs at the front and back ends; the ***underside*** as well as the ***rims*** are always plain.

BASE

Form:	three legs carved in openwork fashion and modelled in the form of large tropical fruitslices.
Size:	varies from approx. 15 to 36 cm.
Decoration:	triangular perforations.

(SPM2.L3/FSL continued)

(* Example 482 is unusual in that it is double-headed, i.e. it has two small feline heads carved into the front end of the grinding plate. It has a certain affinity to the SPM1.L3 group with knobs (K) attached to the grinding plate. However, it has clearly FSL legs and is therefore grouped within the SPM2.L3/FSL category.

Distribution: Greater Nicoya, c. AD 500-1000.

Reported site: Filadelfia, Tempisque River Valley (Lothrop, 1926:425).

2. SPM2.L4: effigy special purpose metate with four legs

Although four-legged (L4) SPM2 metates occur rarely, they seem to constitute a separate group. They are unusual amongst SPM types not only because they have four legs but also for the panels which link the trapezoidally shaped legs on the longside of the metate and are carved in openwork fashion, in the same manner as the legs. All of them have legs carved in open fretwork (OFR) fashion. One single group is thus defined:

SPM2.L4/TRA/OFR (5 examples)

My sample consists of only five specimens representing different effigies. However, in spite of this variety the overall characteristics of these metates are largely the same and are therefore listed here in one collective description.

SPM2.L4/TRA/OFR(AVI)

(avian effigy special purpose metate with four trapezoidally shaped legs carved in open fretwork fashion)

1 Example: 545* (see VOL. TWO, page 183).

SPM2.L4/TRA/OFR(BOX)

(box-shaped effigy special purpose metate with four trapezoidally shaped legs carved in open fretwork fashion)

3 Examples (in order of overall size, from smallest to largest):

44, 639, 502 (see VOL. TWO, pages 184-186).

SPM2.L4/TRA/OFR(ZOO)

(unidentified zoomorphic effigy special purpose metate with four trapezoidally shaped legs carved in open fretwork fashion)

1 Example: 45 (see VOL. TWO, page 187).

GRINDING TOP

Form: rectangular, rimless, curved lengthwise.

Size: *overall-length* varies from 34 to 85 cm; actual *length* of grinding plate varies from approx. 26 to 70 cm; *width* from 21 to 36 cm

Decoration: an effigy head protrudes from the front end of the grinding plate, either solid or hollowed-out, sometimes with stylized embellishments, but more often naturalistically carved and decorated. The *top* of the grinding plate is usually decorated in low-relief with a geometric pattern a the front and back ends; the *underside* is generally plain, but can have geometric decorations. *Rims* are variably plain or decorated with geometric patterns.

BASE

Form: four legs shaped trapezoidally and carved in openwork fashion.

Size: varies from approx. 17 to 33 cm.

Decoration: generally carved in open fretwork fashion with circular and/or oblong perforations and decorated with linear and/or curvilinear motifs in low-relief. The legs are linked, on the longside of the metate, by panels carved in openwork fashion and decorated with linear and/or curvilinear motifs.

(* Example 545 has a number of features which sets this metate apart from other SPM2 types. Its head looks like that of a boat-billed heron and is thus totally different from all the other avian effigy metates. In both openwork panels between the legs two skulls are displayed which could be those of monkeys (or Xipe Totec?). These skulls are incorporated in strangely twisted bands, motifs which are Mesoamerican orientated and do not occur in the isthmian iconography. This metate is reportedly from Tenampua, Central Honduras, which belongs to the Northern Zone, not to Greater Nicoya from where the other effigy metates of the TRA/OFR group originate.)

Distribution: Greater Nicoya, c. AD 500-1000 and Northern Zone.

Reported sites:

San Juan, Guanacaste (Lehmann, 1909), incl. example 45.

Example 44 is reportedly from Moyogalpa, Ometepe Island, Nicaragua (Dockstader, 1964).

Example 545 is reportedly from Tenampua, Comayagua Dept., Central Honduras (Popenoe, 1936:568).

C. THE MPM1 (non-effigy multi-purpose Metate) AND ITS VARIETIES

222 examples will be classified.

In contrast to the SPM1 types which are relatively uniform, MPM1 types vary considerably with regard to the formal aspect of both the grinding top and the base. The grinding plates are generally concave or flat and rimmed. Overall sizes range from very small to very large, with some specimens reaching gigantic dimensions, and it is in this class where the most elaborately carved of all specimens occur.

The following organization into groups depends, in the first place, on the diverse appearance of the metate base. Five different kinds can be distinguished: the MPM1 types with three legs (L3), those with four legs (L4), and three groups which are pedestal-based (PE), figural- supported (FS) and atlantean-supported (ATL). In my sample almost half the MPM1 metates are three-legged (44.5%); the four-legged ones amount to 21%, and the pedestal-based, figural-supported and atlantean-supported specimens account for 15%, 7% and 12.5% respectively. Five major groups will be defined therefore. They are:

MPM1.L3 (98 examples)

MPM1.L4 (47 examples)

MPM1.PE (34 examples)

MPM1.FS (15 examples)

MPM1.ATL (28 examples)

The five categories are sorted further according to the presence or absence of certain specific decorative features which are related to the grinding top as well as to the formal aspect of the grinding plate (fig. 11).

L3	3 legs
L4	4 legs
PE	pedestal-based
FS	figural-supported
ATL	atlantean-supported
NE	no extras
EFF	effigy
HS	human supports
AS	animal supports
MA	marimba
FP	flying-panel
FP+	flying-panel + effigies
PRO	protrusions

SUR	surmounts
PAN	panel
FLS	flared and slits
FLL	flared and lattice-work
BIC	biconical
DRU	drum-shaped
NR	no ring
RB	ring based

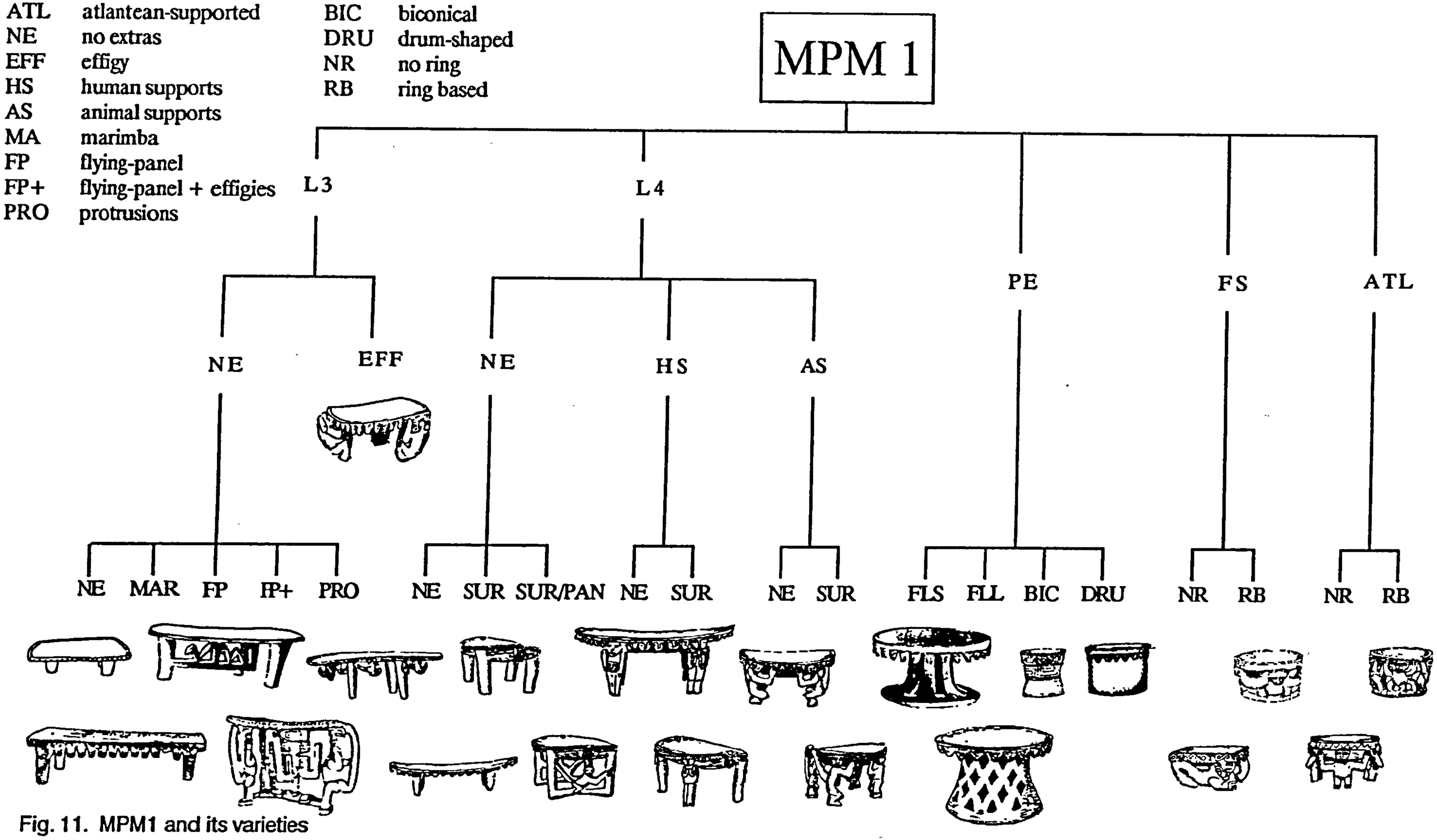


Fig. 11. MPM1 and its varieties

1. MPM1.L3 (non-effigy multipurpose metate with three legs)

The legs of metates in the MPM1.L3 group differ mainly in size, but not much in form; they are mostly conical or cylindrical. Legform is therefore not being considered here as a specific criterion.

The metate tops in the MPM1.L3 category, on the other hand, occur in a wide variety. Not only are they varied in form, but they also display particular decorative features which clearly set them apart from each other. To start with, six distinctive varieties can be recognized: 1) the three-legged MPM1 metates with grinding plates which display no major appendages, 2) those with carved projections on the underside of the platform resembling marimba pipes (MAR), 3) the large tripods with a flying-panel (FP) extending from the underside of the platform, 4) those which have a flying-panel, plus effigies displayed on the legs (FP+), 5) a small subgroup with effigies (EFF) modelled on to the outside of the metate legs and 6) a few examples with bird-like protrusions (PRO) carved three-dimensionally into the underside of the platform:

MPM1.L3 (31 examples)
MPM1.L3(MAR) (14 examples)
MPM1.L3(FP) (14 examples)
MPM1.L3(FP+) (31 examples))
MPM1.L3/EFF) (5 examples)
MPM1.L3(PRO) (3 examples)

Four of the varieties are additionally subdivided according to the formal/functional aspect of the grinding plate which can be rectangular (REC), subrectangular (SRE), oval (OVL) or circular (CIR).

1a. MPM1.L3: non-effigy multipurpose metate with three legs

The three-legged MPM1 specimens with no major additional decorative features represent a fairly homogeneous group, although they differ considerably in size and with regard to the form of the grinding plates. These occur in rectangular (REC), sub-rectangular (SRE), oval (OVL) and circular (CIR) form. Accordingly four subgroups are defined, plus an additional one with rimless (NRI) grinding plates and legs which are slightly curved outwards:

- MPM1.L3(REC)
- MPM1.L3(SRE)
- MPM1.L3(OVL)
- MPM1.L3(CIR)
- MPM1.L3(NRI)

Decoration in this group is confined to the rim of the grinding top and consists of nubs or notches carved along the edge. The legs remain undecorated and tend to be short.

Since the general characteristics, apart from the shape of the grinding plate, are largely shared by the first four subgroups, they are listed here in one collective description. The group with rimless rectangular grinding tops figures separately.

MPM1.L3(REC)

(non-effigy multipurpose metate with three legs and rectangular grinding plate)

3 Examples (in order of overall size, from smallest to largest):

310, 309, 63 (see VOL. TWO, pages 188-190).

MPM1./L3(SRE)

(non-effigy multipurpose metate with three legs and sub-rectangular grinding plate)

6 Examples (in order of overall size, from smallest to largest):

285, 314, 313, 65, 315, 316 (see VOL. TWO, pages 191-196)..

MPM1.L3(OVL)

(non-effigy multipurpose metate with three legs and oval grinding plate)

10 Examples (in order of overall size, from smallest to largest)

311, 74, 312, 645, 625, 520, 73*, 50*, 64, 522 (see VOL. TWO, pages 197-206).

MPM1./L3(CIR)

(non-effigy multipurpose metate with three legs and circular grinding plate)

9 Examples (in order of overall size, from smallest to largest):

67, 69, 66, 71, 68, 521, 70, 307, 72 (see VOL. TWO, pages 207-215).

(MPM1.L3 continued)

GRINDING TOP

Form: rectangular, sub-rectangular, oval or circular; rimmed or concave.

Size: ***length*** varies from 24 to 75 cm in the case of the rectangular, sub-rectangular and oval metates, the longest occurring with the sub-rectangular form; ***width*** varies from 18 to 42 cm. The ***diameter*** of the circular metates varies from 23 to 44 cm.

Decoration: only the ***rim*** is embellished, generally notched or carved with nubs which protrude from the lower edge of the rim. Sometimes these nubs are developed into miniature zoomorphic or anthropomorphic heads.

BASE

Form: 3 conical or cylindrical legs.

Size: generally short, although length varies from approx. 8 to 35 cm, the longest occurring with the sub-rectangular shaped metates.

Decoration: none.

(* These metates represent anomalies. Example 73 has a rim which is unusually decorated with three human heads at each end and with a small lizard carved in high-relief on one side; it also displays some linear motifs carved in low-relief on the rim. Example 50 is the only specimen which is flat, rimless and, although oval in overall form, is in outline violin-shaped. The legs are unusual too in that they are fluted.)

Distribution: Central Costa Rica and Central Panama, c. AD 1-900.

Reported sites:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945: pl.13B,13E,13F) incl. reportedly examples 310, 309 and 315.

La Fabrica de Grecia, Central Highlands, Costa Rica, AD 400-900 (Snarskis, 1981a:58) incl. examples 314 and 313.

Severo Ledesma, Jimenez River Valley, Atlantic Watershed Costa Rica, AD 1-400 (Snarskis, personal communication) incl. examples 520 and 521.

Tibas, nr. San Jose, Central Highlands, Costa Rica, AD 1-400 (Snarskis, 1979:89).

Las Pavas, Prov. San Jose, Central Highlands, Costa Rica (Spranz, 1957:149) incl. example 71.

Santiago, eastern Veraguas, Panama (Dade excav., ref. Museum of the American Indian, New York) incl. example 522.

El Indio, Tonosi, Azuero Peninsula, Panama (Ichon, 1980:170).

Williamsburg (Mercocha Site W-1), Atlantic Watershed Costa Rica (Stirling excav.1968, ref.Smithsonian 451148) incl. example 520.

MPM1.L3(NRI)

(non-effigy multipurpose metate with three legs and a rimless rectangular grinding plate)

3 Examples (in order of overall size, from smallest to largest):

46, 306, 47 (see VOL. TWO, pages 216-218).

GRINDING TOP

Form:	rectangular, rimless, very slightly curved lengthwise.
Size:	*length* varies from 38 to 58 cm; *width* varies from 21 to 40 cm.
Decoration:	small nubs protrude from the lower edge of the rim.

BASE

Form:	3 conical legs, generally slightly flaring outwards at the bottom.
Size:	varies from approx. 8 to 24 cm.
Decoration:	none.

Distribution: probably Central Costa Rica, c. AD 1-500, by comparison with other specimens of the MPM.L3 group, e.g. the FP+ variety which share the characteristic form of the grinding plate with nubs carved around the border.

Reported sites: none.

1b. MPM1.L3(MAR) (non-effigy multipurpose metate, 'marimba' type)

The 'marimba' type metates are so named because of their similarity to the Latin American percussion instrument. The tops of these tripods are generally flat and rectangular or sub-rectangular in shape and slightly rimmed. Hanging from the centre along the underside of the platform are carved projections which resemble the resonators of a marimba. They vary in size and are sometimes decorated with white paint. It is thought by some

scholars (Snarskis, 1978:157) that they may represent the scales of an alligator or cayman. The legs of these specimens are at times embellished with zig-zag lines in low-relief and painted out in white. Pigment was not normally used in the decoration of metates in Lower Central America and, as far as I am aware, it only occurs on 'marimba' type and, occasionally, on 'flying-panel' metates.

'Marimba' type metates are, on the whole, large in size. They always have three conical legs which are generally short in proportion to the body.

Based on the form of the grinding plate, three varieties can be distinguished, one with rectangular (REC) tops, another with sub-rectangular (SRE) and one with circular (CIR) grinding plates. The latter seems to be rare and is represented with only one example in my corpus. The three varieties are thus:

- MPM1.L3(MAR/REC)
- MPM1.L3(MAR/SRE)
- MPM1.L3(MAR/CIR)

Apart from the varying form of the grinding top, all three share the general features of 'marimba' types and are therefore listed collectively in one description.

MPM1.L3(MAR/REC)

(non-effigy multipurpose metate, 'marimba' type, three legs, rectangular grinding plate)

6 Examples (in order of overall size, from smallest to largest):
57, 320, 321, 319, 532, 542 (see VOL. TWO, pages 219-224).

MPM1.L3(MAR/SRE)

(non-effigy multipurpose metate, 'marimba' type, three legs, sub-rectangular grinding plate)

7 Examples (in order of overall size, from smallest to largest):

62, 318, 317, 59, 61, 58, 60 (see VOL. TWO, pages 225-231).

MPM1.L3(MAR/CIR)

(non-effigy multipurpose metate, 'marimba' type, three legs, circular grinding plate)

1 Example: 308 (see VOL. TWO, page 232).

GRINDING TOP

Form:	rectangular, sub-rectangular or, rarely, circular, with a slight rim.
Size:	***length*** varies in general from 44 to 68 cm, although one singular specimen has the spectacular ***length*** of 140 cm; ***width*** varies from 25 to 43 cm (the gigantic example measures c. 50 cm in ***width***).
Decoration:	the ***rim*** of the grinding plate is generally decorated with nubs or small stylized heads. A backbone-like ridge of elements, which resemble the resonators of a 'marimba', projects from the ***underside*** of the grinding plate. They vary in size and are sometimes carved in openwork fashion. Occasionally they are decorated with white paint.

BASE

Form:	3 conical or cylindrical legs.
Size:	varies from approx. 10 to 30 cm; generally short in proportion to the body.
Decoration:	mostly none, but occasionally a triple zig-zag line in white paint along the length of the legs.

Distribution: Central Costa Rica, probably c. AD 1-500, by comparison with other specimens of the MPM1.L3 group, such as the MPM1.L3(FP+) variety which share certain characteristics, in particular the form of the grinding plate with a nubbed or notched decoration around the border.

Reported sites: none, although example 319 is said to be from Guapiles, Atlantic Watershed Costa Rica (Baudez, 1970:fig. 151).

1c. MPM1.L3(FP) (non-effigy multipurpose metate with three legs and with a 'flying-panel')

The 'flying-panel' metates are so called because of the panel which is carved hanging from the underside of the platform and joined to the front leg. The panel usually displays one or two or, sometimes, several small creatures of one species which are carved three-dimensionally and in openwork fashion, generally in profile, resting on a bar which is joined to the front leg of the metate. The creatures are variably anthropomorphic or zoomorphic, but always relatively small. Metates of this variety differ from the 'flying-panel' metates which have legs embellished with effigies (FP+) - as will be seen in the following section (1d) - not only in relation to the legs, but also concerning the display in the panel which is, on the whole, much simpler in imagery than it is with the 'FP+' examples.

In general the MPM.L3(FP) metates are large in size, with sub-rectangular (SRE) platforms which are slightly rimmed and notched or lined along the edge with small nubs. At times these look almost like miniature heads. The three legs are usually cylindrical in shape, undecorated and slightly flared at the bottom.

This variety of metates represents, overall, a fairly homogeneous unit.

MPM1L3(FP/SRE)

(non-effigy multipurpose metate with a 'flying-panel', three legs and a sub-rectangular grinding plate)

14 Examples: (in order of overall size, from smallest to largest):

626*, 529, 342, 343, 56, 341, 340*, 524, 525, 530, 526, 531, 527, 528 (see VOL. TWO, pages 233-246).

GRINDING TOP

Form: sub-rectangular, flat and slightly rimmed. A panel projects from the underside and is joined to the front leg.

Size: *length* varies from 64 to 96 cm; *width* varies from 27 to 43 cm.

Decoration: the *rim* of the grinding plate is generally notched or lined along the edge with nubs; at times these nubs look like stylized miniature heads. The panel which is carved hanging from the *underside* of the plate and joined to the front leg displays variably one or two or several small anthropomorphic or zoomorphic creatures, carved in three-dimensional and openwork fashion; they are generally shown in profile, resting on a bar which links the panel to the front leg. The anthropomorphic figures are often depicted in action, blowing or carrying something.

BASE

Form: 3 cylindrical legs, slightly flared at the bottom.

Size: varies from approx. 20 to 30 cm.

Decoration: none.

(* Examples 340 and 626 are unusual. 340 is the only example without either an anthropomorphic or zoomorphic display in the 'flying-panel'. Instead the panel is carved into various open sections, like window-frames. 626 is the only example with a rectangular grinding top; it also has unusually high legs and the avian creature in the panel is large and more like the effigies associated with the FP+ types from Central Costa Rica.)

Distribution: Greater Chiriqui, c. AD 400-700.

Reported sites:

Las Palmas, western Veraguas (Lothrop, 1950:30) incl. examples 342, 340 and also, reportedly, 525.

Sona, western Veraguas (Lothrop, 1950:30) incl. example 341.

Examples 524 and 527 are reportedly from Quebrado Hondo, Veraguas.

Example 526 is reportedly from Bahia Honda, western Veraguas.

1d. MPM1.L3(FP+) (non-effigy multipurpose metate with three legs, 'flying-panel' type, with effigies on legs)

'FP+' stands for 'flying-panel plus', i.e. metates of this variety have, in addition to the flying-panel, effigies carved and joined to the legs. They differ moreover from the 'flying-panel' metates (MPM1.L3(FP), described earlier, with regard to the display on the panel. Here a highly complex imagery appears to be depicted, often with three or more different species of zoomorphic beings as well as representations of anthropomorphic and composite figures carved three-dimensionally and in openwork fashion into the panel. These 'flying-panel' metates represent one of the most spectacular achievements in stone sculpture produced in prehispanic Central America.

On the whole the specimens are large, often with long legs, and it certainly required a highly skilled artisan to carve such elaborate creations out of a single block of volcanic rock.

The carved images represent avian, feline, reptilian and simian creatures and also anthropomorphic figures. Often the central figure in the panel is a human wearing a bird or alligator mask. The effigies carved and joined to the legs frequently depict a bird with a long beak, sometimes holding a human head.

The platforms of these metates are flat and slightly rimmed. Occasionally they are decorated with well defined small heads carved all around the edge, but more often the rim is simply notched or lined along the edge with small nubs. The tops appear variably in rectangular (REC), sub-rectangular (SRE) or oval (OVL) form, and three varieties are therefore defined:

- MPM1.L3(FP+/REC)
- MPM1.L3(FP+/SRE)
- MPM1.L3(FP+/OVL)

The specific features associated with MPM1.L3(FP+) varieties are present with all three forms, and the three subgroups are therefore listed collectively in one description.

MPM1.L3(FP+/REC)

(non-effigy multipurpose metate, tripod, 'flying-panel' type with effigies on legs; rectangular grinding plate)

10 Examples (in order of overall size, from smallest to largest):

630, 536, 535, 335, 51, 539, 333, 534, 537, 331 (see VOL. TWO, pages 247-256).

MPM1.L3(FP+/SRE)

(non-effigy multipurpose metate, tripod, 'flying-panel' type with effigies on legs; sub-rectangular grinding plate)

19 Examples (in order of overall size, from smallest to largest):

544, 533*, 329, 540*, 326, 52, 624*, 328, 327, 336, 330, 323*, 338, 332, 334, 337, 538, 325, 324 (see VOL. TWO, pages 257-275).

MPM1.L3(FP+/OVL)

(non-effigy multipurpose metate, tripod, 'flying-panel' type with effigies on legs; oval grinding plate)

2 Examples (in order of overall size, from smallest to largest):

344, 541 (see VOL. TWO, pages 276-277).

(MPM1.L3(FP+) continued)

GRINDING TOP

Form: rectangular, sub-rectangular or, in rare cases, oval; generally flat, but sometimes slightly curved lengthwise, and always rimmed. A large openwork panel projects from the underside and is joined to the front leg.

Size: *length* varies from approx. 40 to 90 cm and *width* from approx. 30 to 60 cm.

Decoration: the *rim* of the grinding plate is generally notched or lined along the edge with nubs; occasionally it is decorated instead with well-defined carved human heads. The panel which is carved hanging from the *underside* and joined to the front leg usually displays fantastic imagery. Avian, simian, reptilian and feline creatures as well as anthropomorphic figures, carved three-dimensionally, are depicted. The central human figures often appear wearing a bird or alligator mask and standing on a zoomorphic effigy, incorporated in the horizontal part of the panel which links it to the foreleg of the metate. Occasionally incised lines are painted out in white.

BASE

Form: 3 cylindrical legs.

Size: varies from approx. 16 to 70 cm.

Decoration: three-dimensionally modelled effigies are joined to the legs. The majority represent birds with long beaks, sometimes holding a human head. A few specimens have reptilian or simian creatures or anthropomorphic figures instead.

(* These four metates are unusual in that they have atlantean-type legs, i.e. the legs are modelled in form of effigies. 533 has legs in form of anthropomorphic figures linked to a long-beaked birdhead which emerges from the rim of the grinding plate. On example 540 a reptilian creature appears to be incorporated into the legs. The legs of 624 are carved in form of monkeys clasping a fruit or perhaps heads. 323 has legs in form of monkey figures.)

Distribution: Central Costa Rica, AD 1-500.

Reported sites:

Severo Ledesma, Jimenez River Valley, Atlantic Watershed Costa Rica, 50 BC-AD 300 (Snarskis, 1984a:155).

Azul de Turrialba, Atlantic Watershed Costa Rica, AD. 1-500 (Snarskis, 1981b:202; Pfeiffer, 1987:25ff.) incl. examples 539, 336 and 323.

Tortuguero, Pocosi, Limon, Atlantic Watershed Costa Rica (Museo Nacional de Costa Rica certificate no. 0039) incl. example 533.

San Isidro de Heredia, Central Highland Costa Rica (Met. Museum, New York) incl. reportedly example 330.

(MPML3(FP+) continued)

San Rafael de Coronado, Central Highland Costa Rica (Snarskis, 1981b:203) incl. reportedly example 338.

La Union de Guapiles, Altantic Watershed Costa Rica (Snarskis, 1981b:203) incl. reportedly example 334.

Guacimo, Linea Vieja, Atlantic Watershed Costa Rica (Ferrero, 1977:328) incl. reportedly example 324.

1e. MPM1.L3(PRO) (non-effigy multipurpose metate with three legs and with protrusions on underside of grinding plate)

This kind of non-effigy metate is unlike any of the other three-legged varieties and consists in my sample of only three specimens. They all have protrusions (PRO) reminiscent of bird motifs carved three-dimensionally into the underside of the platform. One of the metates has also lizard-like creatures carved in high-relief into the underside of the plate. Otherwise they are plain, with a slightly concave sub-rectangular (SRE) or oval (OVL) grinding top and 3 conical legs.

MPM1.L3(PRO/SRE)

(non-effigy multipurpose metate, tripod, with zoomorphic protrusions below grinding plate; sub-rectangular plate)

2 Examples (in order of overall size, from smallest to largest):

543, 339 (see VOL. TWO, pages 278-279).

MPM1.L3(PRO/OVL)

(non-effigy multipurpose metate, tripod, with zoomorphic protrusions below grinding plate; oval plate)

1 Example: 641 (see VOL. TWO, page 280).

GRINDING TOP

Form:	sub-rectangular or oval, slightly concave.
Size:	*length* varies between 40 and 80 cm; *width* varies from approx. 20 to 35 cm.
Decoration:	only the *underside* is embellished and carved three-dimensionally with elements reminiscent of birdmotifs and, occasionally, with lizard-like figures modelled in high-relief.

BASE

Form:	3 conical legs.
Size:	varies between approx. 15-32 cm.
Decoration:	none.

Distribution: Greater Chiriqui and Central Panama, c. AD 500-800.

Reported sites:

Sixto Pinilla Place, nr. Parita, Herrera, Panama (Ladd, 1964:201) incl. example 543.

Las Palmas, western Veraguas (Lothrop, 1950:30) incl. example 339.

Pueblo Nuevo, Rio Tabasera, southeastern Chiriqui (Feriz, 1959).

1f. MPM1.L3/EFF (non-effigy multipurpose metate, three legs with effigies)

This is a small subgroup of 5 tripod metates with effigies carved on the exterior of the legs. One specimen has squatting human figures modelled over the legs, two display human heads on the upper half of the legs and two have zoomorphic effigies incorporated in the legs; one shows long-beaked

in the legs; one shows long-beaked birds and on the other the effigies are so eroded that it is difficult to identify them. With the exception of one large example, they are of a similar medium size. They all have sub-rectangular grinding plates, flat or very slightly curved and rimmed, with a notched edge.

MPM1.L3/EFF(SRE)

(non-effigy multipurpose metate, tripod, with effigies on legs; sub-rectangular grinding plate)

5 Examples (in order of overall size, from smallest to largest):
54, 322, 55, 523, 53 (see VOL. TWO, pages 281-285).

GRINDING TOP

Form:	sub-rectangular, flat or very slightly curved lengthwise and rimmed.
Size:	*length* varies from approx. 30 to 36 cm, *width* from 26-29 cm, except one very large example (53) which measures 108x65 cm.
Decoration:	the *rim* is generally notched. One of the five examples has a human head hanging from the *underside*; otherwise there is no decoration.

BASE

Form:	3 conical or cylindrical legs with effigies on the outside.
Size:	approx. 15 to 18 cm.
Decoration:	human heads or anthropomorphic or zoomorphic effigies incorporated three-dimensionally into the legs.

Distribution: Central Costa Rica, c. AD 300-500.

Reported site: Porvenir Site, Williamsburg, Atlantic Watershed Costa Rica (Stirling, 1969) incl. example 523.

2. MPM1.L4 :non-effigy multipurpose metate with four legs

Metates in the four-legged MPM1 group differ mainly in the appearance of their legs. These are either standard in shape, i.e. cylindrical or, very occasionally, conical or angular, or they appear in anthropomorphic or zoomorphic form. Three subgroups are therefore defined: 1) metates with 4 standard legs (L4), those with human supports (L4/HS) and those with animal supports (L4/AS):

MPM1.L4 (30 examples)
MPM1.L4/HS (12 examples)
MPM1.L4/AS (5 examples)

The metate tops in this category are predominantly oval and concave. They are generally decorated neatly with a band of pellets and nubs, and some specimens are lined with well-defined small human heads around the edge.

Many four-legged metates have surmounts (SUR) at each end of the grinding top, as if the maker intended to add handles or lugs. These surmounts appear sometimes bird-shaped, at other times they look like small tasselled emblems or crests. It seems possible that what looks like a tassel represents actually the stylized plumage of a bird. In a few cases the surmounts are carved in form of realistic human heads.

2a. MPM1.L4 (non-effigy multipurpose metate with four legs)

The MPM1 metates with four standard legs are generally oval (OVL) in form, although occasional specimens exist with rectangular and rimless (NRI), sub-rectangular (SRE) or circular (CIR) grinding tops. These vary considerably in size, whereas legs tend to be fairly uniform and are, on the whole, on the short side. The sample of this metate type is small.

The majority of four-legged metates have surmounts (SUR) at each end of the grinding top and some specimens have the legs linked front and back forming a panel (PAN) into which simian creatures are carved in openwork fashion; occasionally human heads are displayed instead of monkeys.

Three varieties are defined, i.e.:

- MPM1.L4
- MPM1.L4(SUR/OVL)
- MPM1.L4(SUR/PAN/OVL)

MPM1.L4(SRE)

(non-effigy multipurpose metate with four legs and sub-rectangular grinding top)

1 Example: 347* (see VOL. TWO, page 286).

MPM1.L4(OVL)

(non-effigy multipurpose metate with four legs and oval grinding top)

4 Examples (in order of overall size from smallest to largest):

363, 546, 75, 76 (see VOL. TWO, pages 287-290).

MPM1.L4(CIR)

(non-effigy multipurpose metate with four legs and circular grinding top)

1 Example: 362 (see VOL. TWO, page 291).

MPM1.L4(NRI)

(non-effigy multipurpose metate with four legs and rimless rectangular platform)

1 Example: 346* (see VOL. TWO, page 292).

GRINDING TOP

Form:	generally oval and concave but, occasionally , sub-rectangular or circular.
Size:	*length* varies from 32 to 63.5 cm (or diameter approx. 30 cm); *width* varies from 25 to 34.5 cm.
Decoration:	The *rim* is generally lined with small human or animal heads carved three-dimensionally, often with a larger head appearing over the legs.

BASE

Form:	four cylindrical legs (very rarely conical or angular).
Size:	varies from approx. 7 to 20 cm.
Decoration:	none.

(* These metates display unusual features. Example 346 is an anomaly; the legs belong to an animal effigy and are very similar to those of MPM2 jaguar effigy types. Perhaps the maker intended a jaguar effigy, but the head broke off during manufacture. Example 347 differs from the others with regard to the rim which is not decorated with heads but with a chevron band carved in high relief and terminating over the legs in the shape of two snake heads.)

Distribution: Central Costa Rica, Greater Chiriqui and Central Panama, c. AD 800-1550.

Reported sites:

Las Mercedes, Atlantic Watershed Costa Rica, AD 1000-1550 (Mason, 1945:pl.14C) incl. example 363.

Retes, Cartago, Highland Costa Rica (Aguilar, 1953:47).

Vivala, Chiriqui (MacCurdy, 1911:pl.IVC) incl. reportedly example 362.

Guaniquito, Tonosi Region, Azuero Peninsula, Central Panama, AD 800-1550 (Ichon, 1980:378) incl. example 347.

San Pedro, Veraguas (Brizela, 1972:119).

Isla Palenque, Gulf of Chiriqui (Linares, 1968:61 and pl.20r).

MPM1.L4(SUR/OVL)

(non-effigy multipurpose metate with four legs and oval grinding top with surmounts at each end)

16 Examples (in order of overall size, from smallest to largest):

355, 77, 78, 84, 644, 82, 79, 354, 548, 81, 353, 80, 83, 547*, 345*, 349*
(see VOL. TWO, pages 293-308).

GRINDING TOP

Form: oval and concave, with a surmount at each end of the plate resembling a lug or a handle. Many of these surmounts are carved to look like small emblems or crests; others suggest small birds; occasionally they occur in the shape of human heads.

Size: *length* varies generally from 26 to 47 cm and *width* from 24 to 36 cm; but a few gigantic specimens measure between 98 and 112 cm in *length* and between 58 and 87 cm in *width*.

Decoration: the *rim* is generally embellished with a band of neatly carved pellets and nubs; sometimes the nubs are developed into small human heads.

BASE

Form: four cylindrical or, rarely, conical legs.

Size: varies generally from approx. 12 to 20 cm; the unusually large specimens have longer legs .

Decoration: none.

(* These metates are exceptionally large.)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported sites:

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945:pl. 24D and 24A) incl. examples 355, 354 and, reportedly, 78.

Retes, Cartago, Central Highland Costa Rica (Aguilar, 1953:47).

Porvenir Site, Williamsburg, Atlantic Watershed Costa Rica (Stirling, 1969) incl. ex.548.

MPM1.L4(SUR/PAN/OVL)

(non-effigy multipurpose metate with four legs linked through an openwork panel; oval grinding top with surmounts at each end)

7 Examples (in order of overall size, from smallest to largest):
359, 90, 361, 358, 360, 357*, 108* (see VOL. TWO, pages 309-315).

GRINDING TOP

Form:	oval and concave, with a surmount at each end of the plate resembling a lug or a handle and looking like an emblem or a crest.
Size:	*length* varies from 25 to 38.5 cm; *width* varies from 21 to 34 cm.
Decoration:	a band of neatly carved pellets and nubs surrounds the *rim* as a rule.

BASE

Form:	four cylindrical legs which are linked at the bottom front and back by a horizontal bar, thus forming a U-shaped panel into which monkeys are carved three-dimensionally and in openwork fashion. Occasionally a human head is displayed instead of a simian creature.
Size:	varies from approx. 10 to 22 cm.
Decoration:	none (except panel display).

(* Examples 357 and 108 are anomalies. The four legs of 357 are not cylindrical but shaped like those of an animal; perhaps this specimen was intended originally as a jaguar effigy metate. It is also the only metate of this variety with the rim embellished with a linear pattern carved in low-relief. Example 108 is unusual altogether: its grinding top is rectangular and rimless, and the panel on each side has large oblong holes carved into it.)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported site: Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945:pl. 23B,24E,24F,25A and 25D) incl. examples 359, 361, 358, 360 and 357.

2b. MPM1.L4/HS (non-effigy multipurpose metate with four legs in form of human supports)

Non-effigy metates on four human supports occur exclusively with oval grinding tops. In the main, the anthropomorphic figures carrying the grinding tops seem to be male and only very seldom female, although this aspect is not clearly identifiable. The figures appear sometimes with arms held over the chest, occasionally clasping a head, and at other times with upraised arms seemingly carrying trophy heads.

In general, the oval-shaped specimens are embellished around the border with carved human heads, variably in realistic or stylized form. Some of the plates have surmounts at each end carved in form of heads, emblems or crests.

Within this subgroup two varieties can be recognized, i.e. one with oval (OVL) grinding tops and another with surmounts (SUR/OVL) added to each end of the grinding plate:

- MPM1.L4/HS(OVL)
- MPM1.L4/HS(SUR/OVL)

The sample with surmounts is relatively small.

MPM1.L4/HS(OVL)

(non-effigy multipurpose metate with four human supports and oval grinding top)

9 Examples (in order of overall size, from smallest to largest):

85, 563*, 88, 549, 86, 89, 550, 87, 348* (see VOL. TWO, pages 316-324).

GRINDING TOP

Form:	oval and concave.
Size:	***length*** varies from 22.5 to 54.5 cm and ***width*** from 19 to 39 cm, although one exceptional specimen is known to measure 219 cm in ***length*** and 85 cm in ***width***.
Decoration:	***rim*** is generally lined with small human heads carved in realistic or stylized fashion.

BASE

Form:	four human supports, either with arms held over the chest, sometimes clasping a trophy head, or with arms outstretched carrying the metate top.
Size:	***height*** varies from approx. 7 to 20 cm.
Decoration:	none (apart from 'human' details described above).

(* Example 563 is the only metate with a flat and rimmed grinding top. The decoration of the rim is different too in that it is not lined with carved heads but ornamented with a chevron band carved in low-relief. The anthropomorphic figures support a human head at each end of the grinding top. Example 348 is exceptional because of its gigantic proportions.)

Distribution: Greater Chiriqui, c. AD 400-600, and Central Costa Rica, c. AD 800-1550.

Reported sites:

Barriles Site, El Hato area, Greater Chiriqui (Linares et al., 1975:142; Linares and Sheets, 1980:44ff.) including example 348.

Sabanilla Azul, Cartago, Central Highland Costa Rica (Lehmann, 1909) incl. example 86.

La Lima de Cartago, Central Highland Costa Rica (Lehmann, 1909) including example 89.

Cartago, Central Highland Costa Rica (Spranz, 1957:149) incl. reportedly example 85.

MPM1.L4/HS(SUR/OVL)

(non-effigy multipurpose metate with four human supports and oval grinding top with surmounts at each end)

3 Examples (in order of overall size, from smallest to largest):
629, 350, 356 (see VOL. TWO, pages 325-327).

GRINDING TOP

Form:	oval and concave with a surmount at each end of the plate, variably carved in the form of a head or as an emblem or crest.
Size:	*length* varies between 28 and 38 cm; *width* varies between 20 and 35 cm.
Decoration:	generally carved with nubs around the *rim* or decorated with a band of pellets and nubs.

BASE

Form:	four anthropomorphic supports, on the whole with arms held over the chest.
Size:	*height* varies between approx. 8 to 25 cm.
Decoration:	none (apart from anthropomorphic details mentioned above).

Distribution: Central Costa Rica (and probably Greater Chiriqui), c. AD 800-1550.

Reported site:

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945:pl.24B) including example 356.

2c. MPM1.L4/AS (non-effigy multipurpose metate with four legs in form of animal supports)

All the metates with four legs in the form of animal figures have oval (OVL) grinding tops. Generally the animals represented are monkeys.

Metates in this subgroup occur with or without surmounts (SUR) at each end of the grinding top; the rims are usually decorated with bands of pellets and nubs or stylized heads around the outside. Two varieties are thus defined, but listed in one description as they all share the basic characteristics:

- MPM1.L4/AS(OVL)
- MPM1.L4/AS(SUR/OVL)

The sample represented in this particular group is noticeably small.

MPM1.L4/AS(OVL)

(non-effigy multipurpose metate with four animal supports and oval grinding plate)

1 Example: 561 (see VOL. TWO, page 328).

MPM1.L4/AS(SUR/OVL)

(non-effigy multipurpose metate with four animal supports and oval grinding top with surmounts)

4 Examples (in order of overall size, from smallest to largest):
123, 352, 130, 351 (see VOL. TWO, pages 329-323).

(MPM1.L4/AS continued)

GRINDING TOP

Form: oval and concave, sometimes with a surmount at each end of the top.

Size: *length* varies between 30 and 40 cm; *width* between 27 and 31 cm.

Decoration: the tops are usually embellished around the *rim* with a band of pellets and nubs or stylized heads..

BASE

Form: four monkey figures support the top with their tail and forelimbs.

Size: *height* varies from approx. 10 to 22 cm.

Decoration: none.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported site:

Las Mercedes, Atlantic Watershed Costa Rica (Mason 1945,Pl.24C) incl. example 351.

3. MPM1.PE: non-effigy multipurpose metate supported on a pedestal

The pedestal-based MPM1 types represent a relatively uniform group. The majority have circular-shaped concave tops resting on a columnar pedestal which is generally hollowed out and perforated with vertical slits and flared at the bottom in bell-shaped fashion. Instead of slits some pedestals are carved in a lattice-work pattern. A few specimens are drum-shaped or biconical in form.

Apart from a few exceptionally large examples, the majority of pedestal-based metates are comparatively small in overall size. In the literature the smaller ones are frequently referred to as vase or pot stands, and the larger ones as seats or altars (Mason, 1945:243-246; Hartman, 1901:37, and others). However, many of the specimens which I have examined show wearmarks from grinding use. They are therefore listed here as metates although, undoubtedly, they could have served other purposes too.

Four varieties are defined according to the different aspect of the pedestal base, i.e. 1) MPM1 types with a flared and slit (FLS) pedestal, 2) metates with a flared and lattice-work (FLL) fashioned pedestal, 3) a group of biconical (BIC) structures and 4) metates with a drum-shaped (DRU) base:

- MPM1.PE(FLS) (22 examples)
- MPM1.PE(FLL) (5 examples)
- MPM1.PE(BIC) (3 examples)
- MPM1.PE(DRU) (4 examples)

The rims around the tops of the metates with flared pedestals are often embellished with finely carved heads most of which can be recognized as feline heads. Sometimes even fully modelled free-hanging felines decorate the exterior border of the plate. The biconical and drum-shaped variety, on the other hand, are usually ornamented around the pedestal base with

geometric patterns carved in low and high-relief technique; occasionally anthropomorphic motifs modelled three-dimensionally occur as well.

Excepting the different treatment of the perforation pattern (slits or lattice-work) the two MPM.1.PE varieties sharethesame characteristics otherwise, and they are therefore listed together.

MPM1.PE(FLS)

(non-effigy multipurpose metate supported on a flared pedestal with slits)

22 Examples (in order of overall size, from smallest to largest): 107*,98*, 95, 92, 99*, 91, 366, 100, 364, 103, 96, 102, 365, 553, 552, 93, 551, 97, 94, 371, 369, 372 (see VOL. TWO, pages 333-354).

MPM1.PE(FLL)

(non-effigy multipurpose metate supported on flared pedestal carved in lattice-work pattern)

5 Examples (in order of overall size, from smallest to largest):

106*, 647, 370, 101, 367* (see VOL. TWO, pages 355-359).

GRINDING TOP

Form: circular and concave.

Size: diameter varies in general between 11 and 31 cm, although 6 out of 27 examples are much larger and vary from 45 to 75 cm in diameter.

Decoration: the *rim* is usually lined with finely modelled heads like a fringe; in the main these are feline heads. Very occasionally complete felines are carved hanging from the outer margin of the plate. In a few cases a band of linear motifs, such as a guilloche pattern, is carved in low-relief around the *rim* above the modelled heads.

(MPM1.PE continued)

BASE

Form: columnar pedestal, hollowed out and flared at the bottom in bell-shape fashion.

Size: average height varies from approx. 9 to 22 cm; a few large specimens measure up to 38 cm in height.

Decoration: the pedestal is perforated either with evenly carved long vertical slits (generally four slits, although the larger specimens can have more) or in lattice-work fashion; in the latter case the perforations are diamond-shaped.

(* Several specimens show anomalies. Example 98 is very small, deeply concave and has a truncated cylindrical base without perforation. 99 is supported on a flared pedestal which has no perforations. 107 has an oval top and is supported on a very low solid base. Example 367 stands on a conical pedestal without perforations; carved indentations suggest however that a lattice-work decoration had been intended but not completed. Example 106 is the only specimen with a sub-rectangular rimmed platform. The pedestal base is neither flared nor perforated, but it has diamond-shaped indentations carved in a way which suggests that a lattice-work decoration was intended.)

Distribution: Central Costa Rica and Greater Chiriqui, c. AD 1000-1550.

Reported sites:

Tierras Blancas, SW Irazu slope, Cartago, Central Highland Costa Rica (Spranz, 1957:149; von Schroeter, 1895) incl. examples 100, 97, 101.

Retes, Cartago, Central Highland Costa Rica (Aguilar, 1953:48).

Bugaba, Chiriqui, Panama (von Schroeter, 1895) incl. example 102.

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945: pl. 27A,27B and 27C) incl. examples 94, 369 and 367.

Guayabo de Turrialba, Atlantic Watershed Costa Rica (Aguilar, 1972:122;188-9; Snarskis, 1981b:213) incl. examples 371 and 372.

MPM1.PE/BIC

(non-effigy multipurpose metate on a solid biconical base)

3 Examples:

109, 111, 110 (see VOL. TWO, pages 360-362).

GRINDING TOP

Form: circular and slightly concave.

Size: diameter averages 29 cm.

Decoration: top merges with the base; decoration details are listed below.

BASE

Form: biconical and solid.

Size: height averages 24 cm.

Decoration: the biconical base is decorated with linear patterns carved in low-relief, generally only as far as just below the middle. Occasionally an anthropomorphic head is incoporated in high-relief.

Distribution: not known; probably Central Costa Rica or Greater Nicoya, c. AD 1000-1550, by comparison with specimens of the MPM2.PE/BIC group which share the characteristic biconical form of the base.

Reported sites: none.

MPM1.PE/DRU

(non-effigy multipurpose metate on drum-shaped base)

4 Examples: (in order of overall size, from smallest to largest):

105, 554, 555, 104 (see VOL. TWO, pages 363-366).

GRINDING BASE

Form:	circular and concave.
Size:	diameter varies between 18 and 23 cm.
Decoration:	the *rim* is decorated either with animal heads carved in naturalistic style or with a band of pellets and nubs.

BASE

Form:	columnar, hollowed-out.
Size:	*height* between 15 and 18 cm.
Decoration:	variably plain or decorated in openwork fashion, sometimes incorporating anthropomorphic elements.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported site:

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945:pl. 29F; Hartman, 1901, pl. 14/1 and 14/2) incl. examples 105, 554 and 555.

4. MPM1.FS: non-effigy multipurpose metate, figural-supported

The metates in this group are characterized by being figural-supported. In general the figures are zoomorphic, with the majority representing felines. Two subgroups can be defined; one where the grinding top rests directly on the figures and another which is ring-based:

- MPM1.FS (7examples) and
- MPM1.FS/RB (8 examples)

Metates in the MPM1.FS group represent neatly worked specimens with rectangular, oval or circular grinding tops which rest on two animal figures. In general these are felines, but monkey figures can be seen too and, rarely, also frogs. Although the FS metate tops occur in rectangular (REC), oval (OVL) or circular (CIR) form, they will be listed here together since the features do not vary with the differently shaped tops.

MPM1.FS(REC)

(non-effigy multipurpose metate, figural-supported, with a rectangular grinding plate)

4 Examples (in order of overall size, from smallest to largest):

390, 389, 391, 562 (see VOL. TWO, pages 367-370).

MPM1.FS(OVL)

(non-effigy multipurpose metate, figural-supported, with an oval grinding plate)

2 Examples: 131, 125 (see VOL. TWO, pages 371-372).

MPM1.FS(CIR)

(non-effigy multipurpose metate, figural-supported, with a circular grinding top)

1 Example: 127 (see VOL. TWO, page 373).

GRINDING TOP

Form: in the main rectangular with a rim, but occasionally oval and concave or circular and rimmed.

Size: *length* varies between approx. 14 and 28 cm; *width* varies from 11 to 24 cm; *diameter* approx. 24 cm.

Decoration: the *rim* is variably plain or decorated with bands of geometric patterns carved in low-relief.

BASE

Form: 2 fully modelled animals, carved three-dimensionally, support the grinding top. These are most often felines, but monkeys or frogs occur also.

Size: *height* varies from approx. 6 to 12 cm.

Decoration: the zoomorphic figures are mostly plain, the bodies are only rarely decorated with geometric motifs.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported sites:

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945, pl. 26a, 26B, 26C) incl. examples 390, 389, 391.

La Union, Cartago, Central Highland Costa Rica (Spranz, 1957:149) incl. example 125.

The specimens in the MPM1.FS/RB (ring-based) subgroup have circular grinding tops, and the figures carrying the metate stand on a basal ring. Generally the figures represent felines, although anthropomorphic and simian creatures appear occasionally too.

MPM1.FS/RB(CIR)

(non-effigy multipurpose metate, figural-supported, circular grinding top)

8 Examples (in order of overall size, from smallest to largest):

117, 121, 122, 120, 380, 115, 382*, 114 (see VOL. TWO, pages 374-381).

GRINDING TOP

Form:	circular with a deep rim or deeply concave.
Size:	in general the *diameter* varies between approx. 15 and 24 cm.
Decoration:	the ***rim*** is often embellished with a linear pattern or with a guilloche band carved in low-relief; sometimes it remains plain.

BASE

Form:	animal figures or, sometimes, animal and human figures combined are carved in the round in openwork fashion. They rest on a basal ring and support the metate top. The figures represented are generally felines, sometimes anthropomorphic and feline figures combined or, occasionally,monkey figures.
Size:	average height varies between approx. 7 and 15 cm.
Decoration:	the supporting figures are sometimes embellished with linear decorations in low-relief. The basal ring normally remains plain.

(* Example 382 is unusual in that it has human heads carved around the edge of the rim. The way the animals' legs are done seems oddly 'modern'. Is it perhaps a fake?)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported sites:

Cerro de Puriscal, nr. San Jose, Central Highland Costa Rica (Lehmann, 1913) incl. examples 121 and 120.

Tierra Blanca, SW Irazu, Central Highland Costa Rica (von Schroeter, 1895) incl. example 114.

5. MPM1.ATL: non-effigy multipurpose metate, atlantean-supported

The last group of MPM1 types to be described concerns the atlantean-supported (ATL) kind. They represent a fairly homogeneous group. In general they have circular-shaped (CIR) grinding tops, usually deeply concave or rimmed. Figures carved in the round in openwork style support the metate plates with arms and limbs in atlantean style. Mostly they represent anthropomorphic or simian creatures although, sometimes, the figures appear half-human, half-animal; in rare cases felines occur.

Two subgroups can be distinguished, one with the atlantean figures standing on the ground, and another with the figures resting on a basal ring:

- MPM1.ATL (10 examples)
- MPM1.ATL/RB (18 examples)

On the whole, the atlantean-supported MPM1 specimens are not very large and vary little in size. In the ring-based subgroup, however, some specimens are fairly large.

MPM1.ATL(REC)

(non-effigy multipurpose metate, atlantean-supported, with a rectangular grinding plate)

1 Example: 124 (see VOL. TWO, page 382).

MPM1.ATL(CIR)

(non-effigy multipurpose metate, atlantean- supported, with a circular grinding plate)

9 Examples (in order of overall size, from smallest to largest):

564, 383, 385, 132, 384, 126, 388, 386, 387 (see VOL. TWO, pages 383-391).

GRINDING TOP

Form: in general circular, deeply concave or rimmed; seldom rectangular.

Size: *diameter* varies between approx. 12.5 and 27.5 cm.

Decoration: the *rim* is sometimes embellished with a linear pattern.

BASE

Form: atlantean-style figures, carved three-dimensionally in the round, support the top with their arms or limbs. The figures are most often anthropomorphic, seemingly male, but half-human, half-animal creatures occur occasionally too and, rarely, also simian or feline figures.

Size: average *height* varies between approx. 10 and 12 cm.

Decoration: very occasionally the basal ring is decorated with linear patterns; otherwise no embellishments apart from the zoomorphic and anthropomorphic details mentioned above.

Distribution: Central Costa Rica, AD 1000-1550.

Reported Site:

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945: pl. 29a, b) incl. examples 385 and 384.

MPM1.ATL/RB(CIR)

(non-effigy multipurpose metate, atlantean-supported and ring-based, with a circular grinding top)

18 Examples (in order of overall size, from smallest to largest):

119, 118, 631, 377, 112, 113, 116, 375, 378, 556, 559, 557, 558, 560, 379, 381, 376, 374 (see VOL. TWO, pages 392-409).

GRINDING TOP

Form:	circular, with a deep rim.
Size:	in general the *diameter* varies between approx. 20 and 30 cm, although, occasionally, smaller specimens occur and, sometimes, larger ones with a diameter of up to 45 cm.
Decoration:	the *rim* is often embellished with a linear pattern or with a guilloche band carved in low-relief; sometimes it remains plain.

BASE

Form:	atlantean style figures, carved in the round in openwork fashion, support the top with their arms and limbs and stand on a basal ring. The figures represent most often monkeys or, sometimes, half-human, half-monkey creatures.
Size:	average *height* in general between approx. 10 and 20 cm, although the exceptional larger specimens measure between approx. 26 and 28 cm.
Decoration:	very occasionally the basal ring is decorated with linear patterns; otherwise there are no embellishments apart from the zoomorphic and anthropomorphic details mentioned above.

Distribution: Central Costa Rica and Greater Chiriqui, c. AD 1000-1550.

Reported sites:

Tierra Blanca, SW Irazu slope, Central Highland Costa Rica (von Schroeter, 1895) incl. examples 119 and 116.

Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945:pl. 28A, 28C) incl. examples 377, 556, 374.

Retes, Cartago, Central Highland Costa Rica (Aguilar, 1953:49).

(MacCurdy, 1911:35 and pl.IV, mentions examples from Chiriqui.)

D. THE MPM2 (effigy multipurpose Metate) AND ITS VARIETIES

242 examples will be classified.

With the exception of 16 specimens the MPM2 types form a more or less homogeneous group. More - because 99% represent zoomorphic effigies (three 'outsiders' are anthropomorphic) with mostly identifiable characteristics, and they all have four legs which are generally shaped naturalistically. Less - because they can be divided into feline and reptilian effigies and because the form of the grinding top varies from rectangular to oval and circular; and some metates display additional features such as panels and loops, and others are double-headed.

The other 16 specimens in the MPM2 category represent three small, but completely separate groups in which the grinding tops are supported other than by legs. One group consists of small metates integrated with a biconical or hour-glass shaped pedestal modelled to represent a reptilian head. The second group is figural-supported with the metates incorporated in large reclining creatures with zoomorphic heads or masks and the third has animals supporting the grinding top.

Depending on these contrasting base structures, the MPM2 types are subdivided into four major groups (fig.12): the large group of MPM2 types with four legs (L4) plus three small categories, i.e. one of metates integrated with biconically-shaped pedestals (PE/BIC), another with figural-supported (FS) metates and a third of metates supported on animals (AS):

MPM2.L4 (226 examples)

MPM2.PE/BIC (7 examples)

MPM2.FS (4 examples)

MPM2.AS (5 examples)

Whereas there is plenty of variety in the MPM2.L4 category for further subdivision, the other three groups show relatively little differentiation within themselves.

L4 4 legs
PE pedestal-based
FS figural-supported
AS animal-supported
ANT anthropomorphic
AVI avian
FEL feline
REP reptile
SIM simian
ZOO zoomorphic
NE no extras
DH double-headed
PAN panel
PDH panelled and double-headed
LOO looped
LDH looped and double-headed

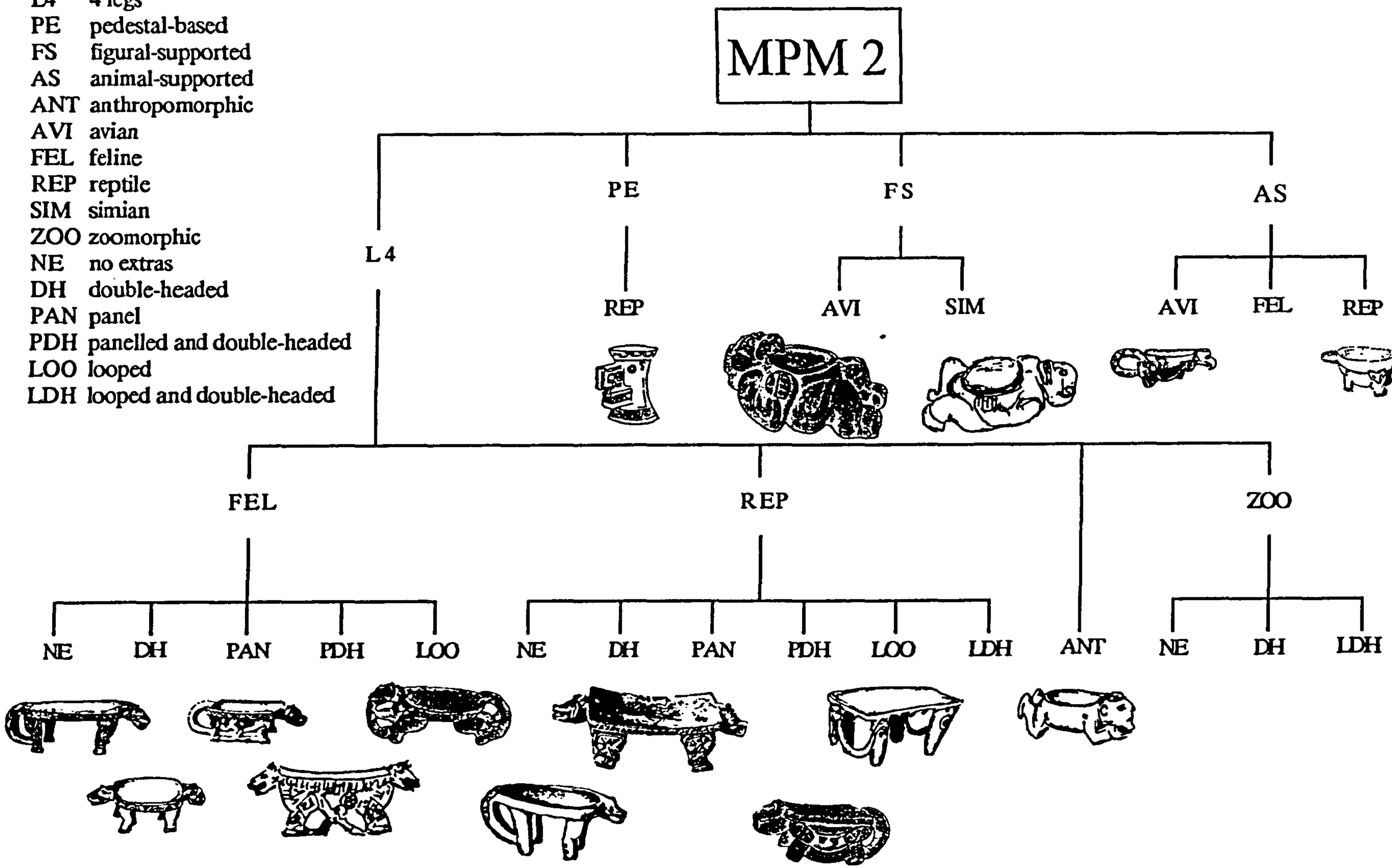


Fig. 12. MPM2 and its varieties

1. MPM2.L4: effigy multipurpose metate with four legs

With a total of 226 examples this is the largest single category of decorated metates. In spite of the different species of animals represented and the variation in overall size, and although the metate tops occur in a number of different forms, this category constitutes a relatively homogeneous group. The animals' heads, limbs and tails are, on the whole, modelled in a naturalistic manner and well outlined. The animals' backs represent the utilitarian element of the metate and are carved out to form the grinding areas.

The four legs are generally symmetrically arranged and have, apart from a few exceptions, a naturalistic appearance. They are usually slightly bent with a marked upper and lower leg and with a flared foot. Since there is comparatively little variation, legform is not considered here as a special criterion.

The main subdivision of the MPM2 types is by the effigy species represented by their heads. The majority, i.e. 175 examples, appear to be feline (FEL) and, apart from 3 anthropomorphic (ANT) and 15 unidentified zoomorphic (ZOO) effigies, the remaining 33 have a distinctly reptilian (REP) look. The more stylized heads are often difficult to identify as either feline or reptilian since they look very similar. In doubtful cases I have tended to designate those with a rather thick-set head and ears on the alert as 'feline' and the ones with a flattened head and sunken eyes as 'reptilian'. Four varieties are thus defined:

MPM2.L4(FEL)

MPM2.L4(REP)

MPM2.L4(ANT)

MPM2.L4(ZOO)

With the exception of the ANT variety, all the other categories are subdivided further depending on the presence or absence of specific features and according to the form of the grinding top.

1a. MPM2.L4(FEL) (feline effigy multipurpose metate with four legs)

Within this variety there is considerable variation in overall size. Also the form of the grinding tops varies from rectangular (rimmed and unrimmed) to subrectangular, oval and circular. The rims are generally decorated with geometric patterns carved in low-relief. By far the largest number of these metates have oval-shaped grinding tops which are concave or slightly rimmed.

In addition to the great number of metates in the basic MPM2.L4(FEL) category, there are some metates with special features. One variety comprises double-headed (DH) feline effigy metates, another consists of single or double-headed specimens with panels (PAN or PDH) between the legs, and the third variety includes feline effigy metates which are looped at the front and back. Four varieties are therefore defined:

MPM2.L4(FEL)

MPM2.L4(FEL/DH)

MPM2.L4(FEL/PAN) or (FEL/PDH)

MPM2.L4(FEL/LOO)

Within the enormous standard MPM2.L4(FEL) category, the bulk of metates have the head, legs and tail modelled in a realistic style, and often all three are decorated with incised geometric motifs. Heads are mostly straight forward looking, although there is an occasional one which turns sideways. The tail is generally long, slender and attached to one of the hind legs, thus forming a loop which could have served as a handle. Curiously there are many more metates with the tail linked to the right hind leg than to the left one. In my sample of 175 feline effigy metates 137 have their tail attached to one of the back legs: 104 (76%) to the right and only 33 (24%) to the left backleg.

Depending on the form of the grinding top the metates in this category subdivide into those which are rectangular and rimmed (REC), and others with no rim (NRI), as well as the subrectangular (SRE), oval (OVL) and circular (CIR) varieties.

- MPM2.L4(FEL/REC)
- MPM2.L4(FEL/NRI)
- MPM2.L4(FEL/SRE)
- MPM2.L4(FEL/OVL)
- MPM2.L4(FEL/CIR)

Apart from the differing form of the grinding top, these varieties share the general features and are therefore listed collectively in one description.

MPM2.L4(FEL/REC)

(feline effigy multipurpose metate, four legs, rectangular and rimmed grinding plate)

31 Examples (in order of overall size, from smallest to largest):

136, 425, 137, 426, 427, 580, 139, 592, 141, 495, 643, 135, 138, 621, 593, 133, 129, 134, 596, 128, 582, 429, 599, 602, 140, 424, 431, 428, 423, 581, 430 (see VOL. TWO, pages 410-440).

MPM2.L4(FEL/SRE)

(feline effigy multipurpose metate, four legs, sub-rectangular grinding plate)

26 Examples (in order of overall size, from smallest to largest):

201, 193, 165, 168, 181, 162, 194, 167, 454, 182, 627, 579, 169, 186, 471, 606, 446, 171, 161, 470, 166, 160, 163, 170, 164, 392 (see VOL. TWO, pages 441-466).

MPM2.L4(FEL/OVL)

(feline effigy mutlipurpose metate, four legs, oval grinding plate)

70 Examples (in order of overall size, from smallest to largest):

468, 196, 202, 144, 197, 174, 203, 591, 185, 180, 188, 184, 457, 189, 145, 150, 199, 195, 154, 183, 190, 398, 452, 636, 447, 179, 178, 462, 576, 614, 173, 414, 588, 147, 619, 595, 156, 157, 175, 158, 399, 578, 148, 153, 176, 407, 459, 146, 458, 635, 149, 455, 403, 469, 597, 408, 605, 571, 577, 400, 604, 394, 401, 453, 177, 402, 589, 151, 404, 603 (see VOL. TWO, pages 467-536).

MPM2.L4(FEL/CIR)

(feline effigy multipurpose metate, four legs, circular grinding plate)

10 Examples (in order of overall size, from smallest to largest):

634, 464, 467, 463, 466, 465, 461, 187, 406, 396 (see VOL. TWO, pages 537-546).

MPM2.L4(FEL/NRI)

(feline effigy multipurpose metate, four legs, rimless rectangular grinding plate)

8 Examples (in order of overall size, from smallest to largest):

192, 598, 191, 438, 439, 436, 440, 437 (see VOL. TWO, pages 547-554).

(P.S. Examples underlined here are from the site of Las Mercedes; see note on following page.)

GRINDING TOP

Form:	rectangular and rimmed or unrimmed, or subrectangular, oval or circular, concave or rimmed, with a feline head projecting from the front end.
Size:	***overall-length*** varies from 15 to 93 cm; ***length*** of actual grinding area varies from approx. 9 to 60 cm; ***width*** varies from 9.5 to 39 cm; ***diameter*** of circular grinding tops varies from 15 to 39 cm.
Decoration:	a feline head projects, with or without a short neck, from the front end of the grinding area, usually carved realistically, often with a partly open mouth showing flashing teeth. A looped tail protrudes from the other end and is generally linked to one of the hind legs, most often to the right one. The ***rim*** of the grinding top is seldom plain but is, on the whole, embellished with a band of geometric patterns and motifs carved in low-relief. Very occasionally, instead of it, ***rims*** are decorated with nubs or small heads carved three-dimensionally along the lower edge. Often the ***head*** shows incised linear or curvilinear decorations and, in general, the ***tail*** is embellished along the top part with geometric patterns.

BASE

Form:	four legs, generally symmetrically arranged and carved realistically, often slightly bent or flexed and modelled with a marked upper and lower leg and a flared foot.
Size:	varies from approx. 4 to 35 cm.
Decoration:	often with geometric motifs carved in low-relief on the outside. However, legs are frequently also plain.

Distribution: Central Costa Rica and Greater Chiriqui, AD 1000-1550.

(MPM2.L4(FEL) continued)

Reported Sites:

Aguacaliente, nr. Cartago, AD 1000-1550, assoc. with La Cabana and Cartago phases (Snarskis, personal communication).

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945:pl. 16a, d, e, 17a,f,18e,f,19b,20a,b,c,21b,e;Snarskis,1978: 278) incl. examples underlined in text.

Tierra Blanca Cemetery, SW Irazu, Central Highland Costa Rica (von Schroeter, 1895) incl. examples 139,138,162,186,196,188,145,178,173 and 153.

Retes, Cartago, Central Highland Costa Rica (Aguilar, 1953:47).

San Ramon, Prov. Alajuela, Highland Costa Rica (Spranz, 1957:148) incl. examples 129, 194.

Paso Ancho, nr. Cartago, Highland Costa Rica (Lehmann, 1909) incl. examples 591 and 190.

La Concepcion, San Miguel del Juco, Chiriqui (Haberland, 1976:115).

St. Andres, Bugavita, Chiriqui (MacCurdy, 1911:33).

Palmar, Chiriqui (Mason, 1945:285).

Las Palmas, western Veraguas (Lothrop, 1950:28)

The MPM2.L4(FEL(DH) variety is small and consists of double-headed (DH) feline effigy metates. The heads appear at either end of the grinding top, generally straight forward looking. Occasionally an example occurs with the heads turned sideways in opposed directions. It is possible that the heads within this variety served as functional elements; the metates listed here are, on the whole, not very large, and it is relatively easy to lift them up or move them around by means of these 'handles'.

The double-headed feline effigy metates occur with grinding tops in various forms: rectangular (REC) and rimmed, also rectangular and rimless (NRI), oval (OVL) and circular (CIR). They are therefore listed as follows:

- MPM2.L4(FEL/DH/REC)
- MPM2.L4(FEL/DH/NRI)
- MPM2.L4(FEL/DH/OVL)
- MPM2.L4(FEL/DH/CIR)

Those examples which have a rimless grinding top might have been used also as seats. The two specimens in my sample both show average wear marks; all the same, they could have served the dual purpose of metate and seat.

Apart from the varying form in grinding tops these metates share the general characteristics and are therefore listed together in one description.

MPM2.L4(FEL/DH/REC)

(feline effigy multipurpose metate, four legs, double-headed, with rectangular (rimmed) grinding plate)

2 Examples:

583, 584 (see VOL. TWO, pages 555-556).

MPM2.L4(FEL/DH/OVL)

(feline effigy multipurpose metate, four legs, double-headed, with oval grinding plate)

5 Examples; (in order of overall size, from smallest to largest):

205, 590, 585, 600, 204 (see VOL. TWO, pages 557-561).

MPM2.L4(FEL/DH/CIR)

(feline effigy multipurpose metate, four legs, double-headed, with circular grinding plate)

2 Examples; 419, 420 (see VOL. TWO, pages 562-563).

MPM2.L4(FEL/DH/NRI)

(feline effigy multipurpose metate, four legs, double-headed, with rimless rectangular grinding plate)

2 Examples: 418, 417 (see VOL. TWO, pages 564-565).

GRINDING TOP

Form: rectangular (rimmed or rimless), oval or circular, concave or rimmed, with a feline head projecting from each end.

Size: ***overall-length*** varies from 22 to 60 cm; ***length*** of actual grinding top varies from approx. 11 to 45 cm; ***width*** varies from 11 to 32 cm; ***diameter*** of circular grinding tops varies between 11 and 12 cm.

Decoration: a feline head projects from each end of the grinding plate with or without a short neck, usually carved realistically and sometimes decorated with incised geometric motifs. The ***rim*** is usually embellished with a band of geometric motifs carved in low-relief.

BASE

Form: two pairs of forelegs, carved realistically; in general flexed and modelled with a marked upper and lower leg and a flared foot.

Size: varies from approx. 7 to 17 cm.

Decoration: sometimes geometric motifs carved in low-relief on the outside, but more often plain.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Sites:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945: pl. 17b, 16b and c) incl. examples 417,419 and 420.

Cartago, Central Highland Costa Rica (Spranz, 1957:148) incl. reportedly example 205.

The MPM2.L4(FEL/PAN) variety includes metates which have the front and back legs, or the front with the back legs, linked by a horizontal bar forming a panel (PAN) into which simian or other zoomorphic creatures are carved in openwork fashion; occasionally human heads replace the animal figures. The grinding tops in this category occur in rectangular (REC) rimmed or rimless (NRI) form, or sub-rectangular (SRE), oval (OVL) or circular (CIR). In addition there are a few examples with panels which are double-headed (PDH). The following varieties can thus be distinguished:

- MPM2.L4(FEL/PAN/REC)
- MPM2.L4(FEL/PAN/NRI)
- MPM2.L4(FEL/PAN/SRE)
- MPM2.L4(FEL/PAN/OVL)
- MPM2.L4(FEL/PAN/CIR)
- MPM2.L4(FEL/PDH/NRI)
- MPM2.L4(FEL/PDH/SRE)
- MPM2.L4(FEL/PDH/OVL)

The features characterizing the feline effigy metates with panels are common to all varieties, and they are therefore listed in one general description.

MPM2.L4(FEL/PAN/REC)

(feline effigy metate, four legs with panels between them, rimmed rectangular grinding top)

2 Examples:

444, 445 (see VOL. TWO, pages 566-567).

MPM2.L4(FEL/PAN/SRE)

(feline effigy metate, four legs with panels between them, sub-rectangular grinding plate)

3 Examples (in order of overall size, from smallest to largest):

615, 159, 373 (see VOL. TWO, pages 568-570).

MPM2.L4(FEL/PAN/OVL)

(feline effigy metate, four legs with panels between them, oval grinding plate)

1 Example: 409 (see VOL. TWO, page 571).

MPM2.L4(FEL/PAN/CIR)

(feline effigy metate, four legs with panels between them, circular grinding plate)

4 Examples (in order of overall size, from smallest to largest):

449, 450, 451, 448 (see VOL. TWO, pages 572-575).

MPM2.L4(FEL/PAN/NRI)

(feline effigy metate, four legs with panels between them, rimless rectangular grinding top)

3 Examples (in order of overall size, from smallest to largest):

433, 435*, 432 (see VOL. TWO, pages 576-578).

MPM2.L4(FEL/PDH/SRE)

(feline effigy metate, four legs with panels between them, double-headed, sub-rectangular grinding plate)

1 Example: 227* (see VOL. TWO, page 579).

MPM2.L4(FEL/PDH/OVL)

(feline effigy metate, four legs with panels between them, double-headed, oval grinding plate)

1 Example: 211 (see VOL. TWO, page 580).

MPM2.L4(FEL/PDH/NRI)

(feline effigy metate, four legs with panels between them, double-headed, rimless rectangular grinding plate)

1 Example: 587* (see VOL. TWO, page 581).

GRINDING TOP

Form: rectangular rimmed or unrimmed, or sub-rectangular, oval or circular, concave or rimmed, with a feline head projecting from the front end or both ends.

Size: ***overall-length*** varies from 26 - 64 cm: ***length*** of actual grinding top varies from approx. 18 to 42 cm; ***width*** varies from 17 to 33 cm; the ***diameter*** of the circular grinding tops varies between 18 to 21 cm.

Decoration: a feline head projects from the front end of the grinding area (or, in the case of double-headed specimens, from each end of the grinding area). The heads are usually carved realistically, mostly with an open mouth and flashing teeth. Often heads have linear or curvilinear motifs carved in low-relief over the neck and front. In most cases the single headed specimens have a long tail linked to one of the hind legs, thus forming a loop. Tails are generally embellished on the topside with incised geometric patterns as are the ***rims*** around the grinding plate.

BASE

Form: four legs, in general symmetrically arranged and carved naturalistically with a marked upper and lower leg. Horizontal bars link the legs either in the front and back or sideways. A U-shaped panel is so formed into which simian, feline or avian creatures are carved in openwork fashion; occasionally human heads appear instead of the zoomorphic effigies.

Size: varies from approx. 8 to 20 cm.

Decoration: the legs are often embellished with linear or curvilinear motifs carved in low-relief. Sometimes the zoomorphic figures in the panel are decorated with geometric patterns as well.

(MPM2.L4(FEL) continued)

(* Example 435 displays an unusual feature: it has a short tail which terminates in a small jaguar head. The panels of example 587 have a strange effigy: instead of zoomorphic images, crossed bars - or perhaps crossed bones? - are represented in openwork carving. Example 227 is an anomaly; it is not 'panelled' like the other specimens, but has a solid base with the beginning of lattice-work carving apparent. Perhaps this was the way to hollow out a base?)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Sites:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945: pl. 17d, 22b, c, e and 23a) incl. examples 445, 409, 450, 451 and 433.

La Colombiana, Linea Vieja, Atlantic Watershed Costa Rica (Snarskis, 1981b:218) incl. reportedly example 435.

Cartago, Central Highland Costa Rica (Spranz, 1957:149) incl. example 227.

The MPM2.L4(FEL/LOO) variety represents the last in the category of feline effigy metates with special features. Here the specimens appear with a looped (LOO) front and back, i.e. the tail is bifurcated and each part joined to one of the hindlegs. To balance this, two curving rope-like sections link the forelegs with the feline's mouth. All the examples in this variety have oval (OVL) grinding plates.

MPM2.L4(FEL/LOO/OVL)

(feline effigy metate, four legs, looped front and back, with an oval grinding plate)

3 Examples (in order of overall size, from smallest to largest):

142, 143, 410 (see VOL. TWO, pages 582-584).

GRINDING TOP

Form: oval and rimmed, with a feline head projecting from the front end.

Size: *overall-length* varies between 32 and 47 cm; *length* of the actual grinding area varies from approx. 20 - 30 cm; *width* varies from 15 - 27 cm.

Decoration: a feline head projects from the front end of the grinding plate, and a tail extends from the other end. The tail is bifurcated and the two sections join the back legs forming two loops. To balance this, two curving rope-like sections extend from the mouth of the feline and join the forelegs in a loop-like fashion. The head and rim, as well as the front and back loops, are decorated with linear and curvilinear decorations carved in low relief.

BASE

Form: four legs, extended as if in running position. They are linked to the tail and mouth (as explained above).

Size: varies from approx. 6 - 12 cm.

Decoration: geometric motifs carved in low-relief on the outside, or completely plain.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Sites:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945: pl. 19e, f) incl. examples 143 and 410.

Tierra Blanca , SW Irazu, Central Highland Costa Rica (von Schroeter, 1895) incl. example 142.

1b. MPM2.L4(REP) (reptilian effigy multipurpose metate with four legs)

Although numerically much smaller, this variety runs in most other aspects parallel with the L4(FEL) category, except that the heads are reptilian in character instead of feline. The majority have crocodilian features, but a few look more turtle-like and some appear distinctly snake-like. Many of the specimens have a long tail, just like the feline effigy metates, attached variably to the right or left hindleg and so forming a loop which could have served as a handle.

There is considerable variation in overall size, including some giant-size specimens. Grinding tops occur variably in rectangular (rimmed and unrimmed), sub-rectangular, oval and circular form, but the oval form strongly predominates. The rims around the grinding tops are often embellished with bands of geometric motifs carved in low-relief, although a few have small heads carved around the rim instead or have no decoration at all.

Similar to the MPM2.L4(FEL) category, there are, in addition to the standard MPM2.L4(REP) variety, some specimens with special features; there are double-headed (DH) examples as well as panelled (PAN) or double-headed and panelled (PDH) metates, and also some looped (LOO) or double-headed and looped (LDH) specimens. Four varieties are therefore defined:

- MPM2.L4(REP) (15 examples)
- MPM2.L4(REP/DH) (5 examples)
- MPM2.L4(REP/PAN) or (REP/PDH) (3 examples)
- MPM2.L4(REP/LOO) or (REP/LDH) (10 examples)

Within the standard MPM2.L4(REP) variety the grinding tops are generally oval (OVL) in form, although the occasional rectangular example does occur. Included here are the unusually large specimens mentioned earlier.

MPM2.L4(REP/REC)

(reptilian effigy multipurpose metate, four legs, rectangular grinding plate)

1 Example: 594 (see VOL. TWO, page 585).

MPM2.L4(REP/SRE)

(reptilian effigy multipurpose metate, four legs, sub-rectangular grinding plate)

1 Example: 443* (see VOL. TWO, page 586).

MPM2.L4(REP/OVL)

(reptilian effigy multipurpose metate, four legs, oval grinding top)

13 Examples (in order of overall size, from smallest to largest):

460, 218, 214, 198, 422, 441, 442, 397, 569, 456, 405, 155, 395 (see VOL. TWO, pages 587-599).

GRINDING TOP

Form: oval and from slightly to deep concave; rarely rectangular or sub-rectangular. A reptilian head projects from the front end.

Size: ***overall-length*** varies from 28 to 187 cm; ***length*** of actual grinding top varies from approx. 18 to 140 cm; ***width*** varies from 16 to 65 cm.

Decoration: a reptilian head (generally alligator-like, but sometimes turtle or snake-like) projects straight out from the front end of the grinding plate, usually carved in a realistic manner. In most cases a looped tail protrudes from the other end and joins one of the hindlegs. The ***rim*** of the grinding plate is often embellished with a band of geometric motifs carved in low-relief; sometimes it remains plain and, occasionally, small heads or zoomorphic figures are added three-dimensionally to the lower edge of the ***rim***. The ***tail*** is usually embellished with a decorative pattern along the top.

(MPM2.L4(REP) continued)

BASE

Form: four legs, in general symmetrically arranged and carved naturalistically, mostly with a marked upper and lower leg.

Size: varies from approx. 6 to nearly 40 cm.

Decoration: variably plain or carved in low-relief with geometric motifs on the outside.

(* Example 443 seems an anomaly. It has a vaguely reptilian head but with a long curved snout, perhaps suggesting a tapir or an armadillo. The grinding top of this metate is not oval, but subrectangular and is decorated with little heads modelled three-dimensionally all around the edge. Below the grinding top appears a protruding appendage, although this is not clear from the illustration. The legs are unusual too in that they have rows of pellets encircling them.)

Distribution: Central Costa Rica (and probably Greater Chiriqui), c. AD 1000-1550.

Reported Sites:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945: pl. 18b, c and 21c) incl. examples 460,441 and 395.

Tierra Blanca , SW Irazu, Highland Costa Rica (von Schroeter, 1895) incl. example 594.

The double-headed examples included in the MPM2.L4(REP/DH) variety appear with rectangular rimless (NRI) or oval (OVL) grinding tops.

MPM2.L4(REP/DH/OVL)

(reptilian effigy multipurpose metate, four legs, double-headed, with an oval top)

2 Examples: 421, 617 (see VOL. TWO, pages 600-601).

MPM2.L4(REP/DH/NRI)

(reptilian effigy multipurpose metate, four legs, double-headed, with a rimless, rectangular grinding plate)

3 Examples (in order of overall size, from smallest to largest):

586, 217, 416 (see VOL. TWO, pages 602-604).

GRINDING TOP

Form:	rectangular and rimless or oval., with a reptilian head projecting from each end.
Size:	*overall-length* varies from 23 to 51.5 cm; *length* of actual grinding plate varies from approx. 18 to 35 cm; *width* varies from 14 to 20 cm.
Decoration:	a reptilian head (in the main alligator-like, but occasionally turtle-like) projects directly out from each end of the grinding top. The heads are generally carved in naturalistic fashion, sometimes embellished on the brow with geometric motifs. The *rim* is often decorated with geometric motifs carved in low or high-relief, but sometimes left undecorated.

BASE

Form:	two pairs of forelegs, sometimes flexed and generally carved with a marked upper and lower leg with a flared foot.
Size:	generally short, varying from approx. 7 to 12 cm.
Decoration:	variably plain or decorated with geometric motifs on the outside.

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Site:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945, pl. 18a and 21a) incl. examples 217 and 416.

The panelled (PAN) metates and the panelled and double-headed (PDH) specimens of the MPM2.L4(REP/PAN) and MPM2.L4(REP/PDH) varieties come with either oval (OVL) or rimless rectangular (NRI) grinding plates.

MPM2.L4(REP/PAN/OVL)

(reptilian effigy multipurpose metate, four legs, with panels between the legs, oval grinding top)

1 Example: 601* (see VOL. TWO, page 605).

MPM2.L4(REP/PAN/NRI)

(reptilian effigy multipurpose metate, four legs, with panels between the legs, rimless, rectangular grinding plate)

1 Example: 434 (see VOL. TWO, page 606).

MPM2.L4(REP/PDH/NRI)

(reptilian effigy multipurpose metate, four legs, with panels between the legs, double-headed, rimless, rectangular grinding plate)

1 Example: 415 (see VOL. TWO, page 607).

GRINDING TOP

Form:	generally rectangular and rimless, with a reptilian head projecting from the front end, or from both ends.
Size:	*overall-length* varies from 37.5 to 55 cm; *length* of actual grinding plate varies from approx. 24 to 35 cm; *width* varies from 17 to 23 cm.
Decoration:	a reptilian head (generally alligator-like) projects form the front end of the grinding area (or from both ends in the case of double-headed metates), variably in realistic or stylized fashion. The *rim* can be plain or decorated with a band of geometric motifs. If the metate has a *tail* it is generally linked to one of the hindlegs in a looped manner and is usually embellished with geometric motifs carved in low-relief along the topside.

(MPM2.L4(REP) continued)

BASE

Form: four legs, symmetrically arranged and generally carved realistically with a marked upper and lower leg and a flared foot (double-headed specimens have 2 pairs of forelegs). The fore and back legs are joined on each side by a bar forming a panel into which simian or anthropomorphic creatures are carved three-dimensionally in openwork fashion.

Size: varies approx. from 10 to 18 cm.

Decoration: the display in the panel between the legs is carved in openwork fashion and the legs are generally embellished with geometric or naturalistic motifs.

(* Example 601 is unusually decorated around the edge with carved heads. The panels too are peculiar in that they are solid, although simian creatures are carved in high-relief into it. This may be an unfinished example, i.e. the maker never got as far as breaking through the panels.)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Site:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945:pl. 23d) incl. example 434.

The majority of looped metates within the MPM2.L4(REP) category consist of double-headed (LDH) examples. They occur more often with rectangular (REC) or subrectangular (SRE) than oval (OVL) grinding tops and appear generally notched around the rim or decorated with miniature heads. It is perhaps slightly doubtful whether the effigy heads are truly reptilian but, in my opinion, they appear to represent snakes with bifurcated tongues which link up with the legs in form of loops.

MPM2.L4(REP/LOO/OVL)

(reptilian effigy multipurpose metate, four legs, looped, with oval grinding top)

1 Example: 215* (see VOL. TWO, page 608).

MPM2.L4(REP/LDH/REC)

(reptilian effigy multipurpose metate, four legs, double-headed and looped, rectangular grinding plate)

3 Examples (in order of overall size, from smallest to largest):
413*, 412, 633 (see VOL. TWO, pages 609-611).

MPM2.L4(REP/LDH/SRE)

(reptilian effigy multipurpose metate, four legs, double-headed and looped, sub-rectangular grinding plate)

5 Examples (in order of overall size, from smallest to largest):
206, 207, 212, 208, 213 (see VOL. TWO, pages 612-616).

MPM2.L4(REP/LDH/OVL)

(reptilian effigy multipurpose metate, four legs, double-headed and looped, oval grinding top)

1 Example: 411 (see VOL. TWO, page 617).

GRINDING PLATE

Form:	rectangular or subrectangular with a slight rim; only rarely oval and concave, with a small reptilian head at each end.
Size:	*overall-length* varies from 24.5 to 65 cm; *width* varies from 21 to 45 cm.
Decoration:	a small head projects generally from each end of the grinding plate; the heads have a reptilian look and could be snakes with bifurcated tongues, since two long parts extend from the mouth and join up with the legs in a loop. The *rim* is generally carved with nubs or with small stylized heads along the edge.

(MPM2.L4(REP) continued)

BASE

Form: four conical legs which are linked in loop-form to the heads at the front and back through the bifurcated parts of the reptilian tongue.

Size: varies from approx. 11 to 36 cm.

Decoration: none except for the tail-end of the loop which, in most cases, is carved curling around like a spiral on the upper part of each leg.

(* Example 215 is the only single-headed specimen in my sample; it is looped all around by its own bifurcated tail. Although the head has a reptilian-like look, this metate is, in overall appearance, closer to the feline category of looped specimens (MPM2.L4/FEL/LOO/OVL). Example 413 has the rim around the grinding plate unusually decorated with a band of geometric motifs. The legs are cylindrical rather than conical and are also embellished with linear decorations. The loops linking the heads with the legs finish not in a spiral but in small heads.)

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Sites:

Capelladas de Cartago, Highland Costa Rica (Lehmann, 1909) incl. example 208.

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason,1945:pl.19d) incl. example 411.

1c. MPM2.L4(ANT) (anthropomorphic effigy metate with four legs)

Anthropomorphic effigy metates seem to be rare. Only three examples have so far come to my attention. They have concave, oval (OVL) or circular (CIR) grinding plates with rims which are plain or embellished in linear patterns carved in low-relief. The top of the heads are flattened and decorated with geometric motifs. One specimen has a short tail and short zoomorphic legs, somewhat similar in style and execution to the legs of feline and reptilian effigies. The second specimen has its tail broken as well as its four legs; the third is supported on bent legs and arms carved in naturalistic style. None of them is very large. I have been able to examine two of the three examples; both show wearmarks and were undoubtedly used as grinding implements in the same way as the zoomorphic effigy metates.

MPM2.L4(ANT/OVL)

(anthropomorphic effigy multipurpose metate, four legs, oval grinding top)

2 Examples: 222, 223 (see VOL. TWO, pages 618-619).

MPM2.L4(ANT/CIR)

(anthropomorphic effigy multipurpose metate, four legs, circular grinding top)

1 Example: 642 (see VOL. TWO, page 620).

Distribution: probably Central Costa Rica, c. AD 1000-1550, based on similarities in facial characteristics of Period VI statuary and also by comparison with zoomorphic effigy metates of the MPM2.L4 group which share similar characteristics..

Reported Sites: none.

1d. MPM2.L4(ZOO) (zoomorphic effigy metate, unidentified, with four legs)

Some fifteen zoomorphic (ZOO) effigy metates are difficult to identify, either because they are too far eroded or because they were so roughly modelled that it is impossible to recognize what effigy they are supposed to represent.

They are listed here together with the nearest variety to which they could belong.

MPM2.L4(ZOO/SRE)

(unidentified zoomorphic effigy metate, four legs, sub-rectangular grinding top)

1 Example:

574 nearest to MPM2.L4(FEL/SRE)

(see VOL. TWO, page 621).

MPM2.L4(ZOO/OVL)

(unidentified zoomorphic effigy metate, four legs, oval grinding top)

9 Examples (in order of overall size, from smallest to largest):

152, 200, 216, 172, 620, 219, 287, 618, 573 - all except example 200 are nearest to MPM2.L4(REP/OVL); example 200 appears more feline (FEL), i.e. nearer to MPM2.L4(FEL/OVL)

(see VOL. TWO, pages 622-630).

MPM2.L4(ZOO/CIR)

(unidentified zoomorphic effigy metate, four legs, circular grinding top)

2 Examples:

221, 220 (both are very small, - perhaps armadillo effigies? nothing comparable)
(see VOL. TWO, pages 631-632).

MPM2.L4(ZOO/DH/OVL)

(unidentified double-headed zoomorphic effigy metate, four legs, oval grinding top)

1 Example:

393 (nothing comparable; excavated at Sitio Conte, Grave 5 (Lothrop 1937:96)
(see VOL. TWO, page 633).

MPM2.L4(ZOO/LDH/OVL)

(unidentified looped and double-headed effigy metate, four legs, oval grinding top)

2 Examples:

210, 209 nearest to MPM2.L4(REP/LDH)

Example 209 was excavated at San Ramon, Prov. Alajuela, Highland Costa Rica (Spranz, 1957:149)

(see VOL. TWO, pages 634-635).

2. MPM2.PE/BIC: effigy multipurpose metate, integrated with a biconical pedestal

This is a small but entirely homogeneous group consisting of reptilian (REP) effigy metates integrated with biconical (BIC) or hourglass-shaped pedestals. They are thus defined as:

- MPM2.PE/BIC(REP)

The pedestals or stands are solid and vary in height only slightly, between 30 and 49 cm. They all have alligator features added three- dimensionally, giving them a bizarre appearance. The top part is slightly concave, carved like a small dish. Grinding marks on some specimens confirm that they could have served as metates. However, such specimens have been excavated in association with house foundations and were thought to have served as stands, perhaps having the role of small altars for the display of offerings (Baudez, personal communication). Nevertheless it is likely that these unique creations served as both metates and potstands, and perhaps also as seats.

MPM2.PE/BIC(REP/CIR)

(effigy multipurpose metate integrated with a biconically-shaped pedestal)

7 Examples (in order of overall size, from smallest to largest):
472, 473, 474, 225, 224, 226, 570 (see VOL. TWO, pages 636-642).

Distribution: Greater Nicoya, c. AD 1000-1550..

Reported Sites:

Papagayo, Bay of Culebra, Pacific Costa Rica (Baudez, personal communication).

Buenavista, Rio Frio, Nicoya (Lehmann, 1909) incl. example 226.

3. MPM2.FS: effigy multipurpose metate, figural-supported

This small group of giant-size specimens represents the most extraordinary class of effigy metates, if indeed these composite figures with a bowl incorporated in their body can be considered as figural-supported metates. Their reclining position is vaguely reminiscent of the 'chacmool' figures of Postclassic Mesoamerica.

The base is represented by large-scale naturalistically modelled figures displaying a well-built human or perhaps ape-like body which rests on shoulders, buttocks and feet with the legs flexed symmetrically. The abdomen is hollowed out to form a basin which could have served as a metate. In my sample of four specimens two figures have prominent male sex organs, whereas the other two seem sexless. The figures all have zoomorphic heads, variably avian (AVI) or simian (SIM), and one has both avian and reptilian characteristics. It is uncertain whether these figures are humans or apes, but I see them as humans rather than apes, - humans wearing animal masks, similar to the figures associated with the flying-panel metates (MPM1.L3(FP+) where such personages are central to the picture which unfolds in the panel below the grinding plate.

Compared to other effigy metates, all four specimens are unusually large in overall size. The figures vary in length between 110 and 115 cm. The basins - which could have been used as grinding bowls - are circular and vary in diameter between approximately 40 and 50 cm.

The specimen with an avian head which has also some reptilian features shows no additional decoration.

Of the two examples with simian effigy heads, one is plain and the other displays triple circles carved in low-relief on the two knees and the shoulders.

The only specimen decorated in a rather ornate fashion is the one with a distinctly avian effigy head, which has a prominently curved bill extending over the grinding bowl. An ornamental headdress covers its head. It is also embellished over each of the legs and arms with a snake carved in low-relief curving along the shape of the four limbs.

MPM2.FS(AVI/CIR)

(avian effigy multipurpose metate, figural-supported, circular grinding top)

2 Examples:

567, 565 (see VOL. TWO, pages 643-644).

MPM2.FS(SIM/CIR)

(simian effigy multipurpose metate, figural supported, circular grinding top)

2 Examples:

566, 568 (see VOL. TWO, pages 645-646).

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Site:

Las Mercedes, Santa Clara Valley, Atlantic Watershed Costa Rica (Mason, 1945:pl. 35c) incl. example 565.

4. MPM2.AS: effigy multipurpose metate, animal-supported

This is a small category of decorated metates of an unusual kind. The reason for putting them together is the fact that they all have grinding tops supported by animal effigies. In my sample there are only five specimens. One of them is an avian (AVI) effigy metate supported by two monkeys, three are reptilian (REP) effigy metates (two with crocodilian heads and one looking rather snake-like) which are upheld by jaguars, and one is a feline (FEL) effigy metate supported by monkeys.

All five examples are relatively small in size and have oval grinding tops. Two of the three reptilian effigy metates, which are supported on jaguars, look much the same, whereas the other three specimens are distinctly individual in appearance.

The five examples are listed as follows:

MPM2.AS(AVI/OVL)

(avian effigy multipurpose metate, animal-supported, oval grinding top)

1 Example: 476 (see VOL. TWO, page 647).

MPM2.AS(FEL/OVL)

(feline effigy multipurpose metate, animal-supported, oval grinding top)

1 Example: 228 (see VOL. TWO, page 648).

MPM2.AS(REP/OVL)

(reptilian effigy multipurpose effigy metate, animal-supported, oval grinding top)

3 Examples: 477, 229, 475 (see VOL. TWO, pages 649-651).

Distribution: Central Costa Rica, c. AD 1000-1550.

Reported Site:

San Isidro de Arenillas, nr. San Jose, Central Highland Costa Rica (Wiss, 1903) incl. example 229.

CHAPTER III

STYLISTIC CONSIDERATIONS

THE POTENTIAL OF DECORATIVE FEATURES

The meaning of 'stylistic' as applicable to this study is explained at the beginning of chapter II (p.33) as a mode of expressing particular features which are normally independent of utilitarian functions. Effigy heads integrated with the grinding plates, transforming them into zoomorphic effigies - or, in rare cases, anthropomorphic effigies - , are a case in point. In addition, the embellishments on the isthmian metates (recurring decorative patterns and iconographic motifs) offer an abundance of such elements. They represent cultural information and are therefore useful as indicators of continuity and change in traditions over space and time. The study of such 'stylistic' elements can bring us nearer to understanding a prehistoric society from which no documentary and very little ethnohistoric evidence is available.

A large proportion of the isthmian metates display, in addition to finely carved geometric embellishments, a strikingly imaginative stylistic treatment of zoomorphic and anthropomorphic elements. The scenes depicted on certain metates are highly complex and cannot have been intended simply as decorative, but must have been connected with the ideas and beliefs shared by certain societies in prehistoric times. As we have no written records from these peoples, an explanation of their cosmology remains guesswork. But a stylistic analysis of the elements which they used to express 'their world' will at least give us some temporal and spatial clues.

The stylistic analysis of my metate corpus was in fact begun earlier, in chapter II, with the definition of metate types by organizing them into specific groups according to recognizable formal aspects (three or four legs, pedestal-based etc.) and by using certain decorative features as an additional criterion. In view of the great variety of embellishments displayed by the isthmian metates it seemed

appropriate to undertake, in addition, a detailed stylistic analysis of specific decorative details and iconographic elements. Such an analysis should, hopefully, add a further dimension to the picture already obtained of distributional patterns over the centuries. It could also be useful in indicating links and contacts on a wider inter-regional basis.

In my database file I recorded the embellishments of each metate in my archive (see Appendix 3). In total I have isolated 39 different decorative elements and coded these. I then began my first analysis (see Appendix 4) by taking each classified group of metates separately, recording the decorative features on each specimen, inclusive of where these occurred on the metate (e.g. above or below the grinding plate, or on rim, or on base etc). For the second analysis I only took the four basic metate type categories, SPM1 and SPM2 (special purpose non-effigy and effigy metates), MPM1 and MPM2 (multipurpose non-effigy and effigy metates), and looked at the frequency in occurrence of individual decorative features on metates of these groups.

I would have liked to present a more fine-grained analysis based upon groups and subgroups of metates, rather than the four basic categories but, unfortunately, I did not have a sufficiently sophisticated computer application at my disposal. An attempt to enlist the help of a computer specialist at the Institute of Archaeology failed. Apparently my data information was too complex for any available computer programme. Nevertheless, although a detailed overall picture in a clear graphic illustration would have been a useful visual aid, I do not think that such an analysis would have brought about any drastic change to my study.

The embellishments range from simple geometric forms to fairly complex patterns and themes, including anthropomorphic and zoomorphic motifs and figures. In the following analysis the distinction is therefore made between <u>geometric elements</u> and <u>anthropomorphic/zoomorphic motifs and figures</u>.

CATALOGUE OF RECURRING MOTIFS AND FIGURES

For the sake of clarity in this text I have re-numbered the decorative motifs and patterns to follow a sequence from 1 to 31 for geometric elements, and from A to H for anthropomorphic and zoomorphic motifs and figures. In the Analysis (Appendix 4), the codes used in the database are listed side by side with the 'new' numbers or letters for each set of reference.

1. Geometric Elements

When I began to isolate and identify recurring geometric elements I found that some occur only as single motifs, whereas others appear in repeated patterns. Accordingly I have divided this group into: single motifs and motifs repeated in pattern form.

The list of geometric themes is extensive and ranges from simple linear and curvilinear elements to remarkably intricate motifs such as interlaced bands, patterns imitating basketry weaves, guilloche and meander bands.

Single Motifs

Compared to the group of 'motifs repeated in pattern form' the frequency rates in occurrence of single motifs in the decoration of metates are noticeably low. The 9 different motifs described here (fig. 13) appear usually carved either in low or high-relief technique.

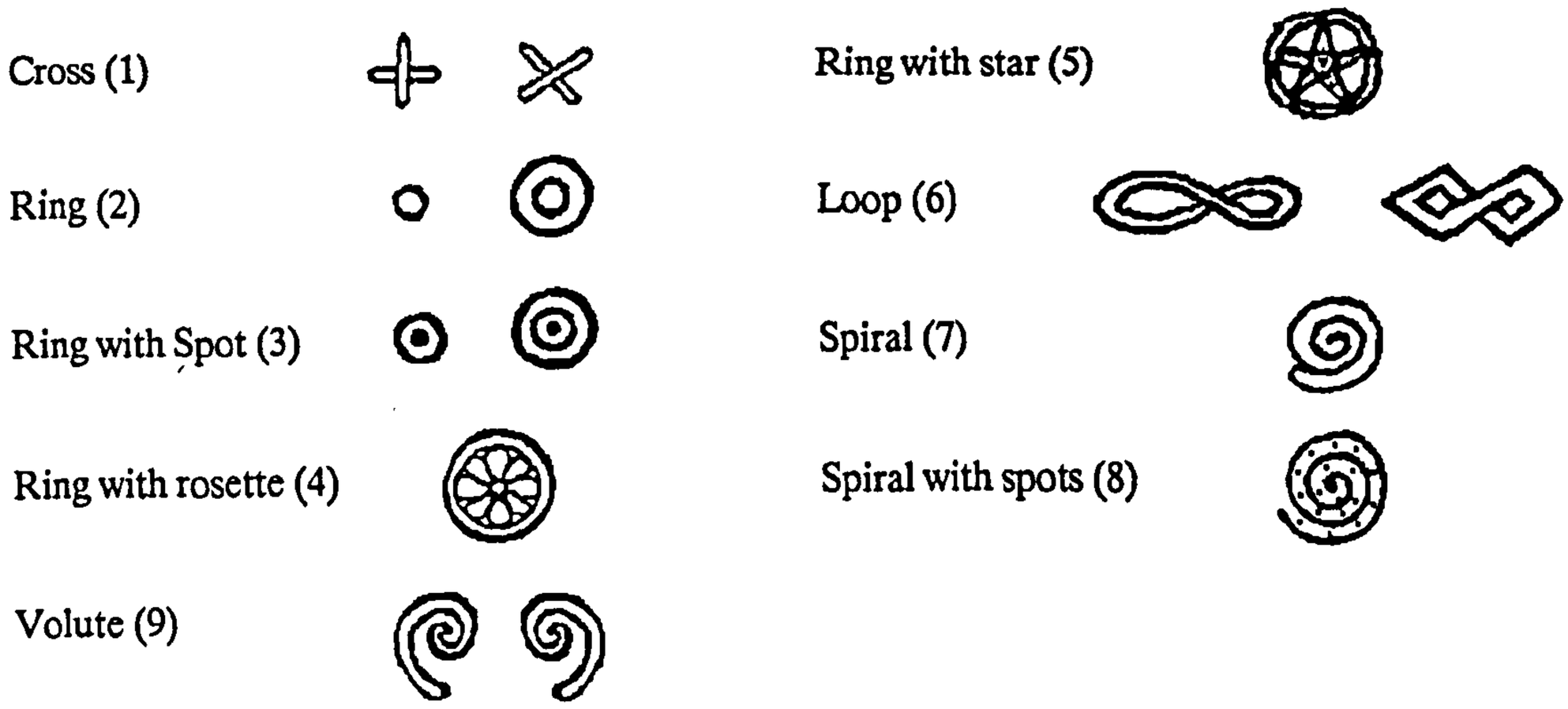


Fig. 13. Geometric elements as single motifs

Motifs	SPM1 (76)	SPM2 (107)	MPM1 (222)	MPM2 (242)
Cross (1)	2.5%	5.5%	2%	1%
Ring (2)	-	-	0.5%	6.5%
Ring with spot (3)	-	4.5%	0.5%	8.5%
Ring with rosette (4)	-	-	-	3%
Ring with star (5)	-	-	-	1.5%
Loop (6)	-	5.5%	2%	7%
Spiral (7)	-	3.5%	-	3.5%
Spiral with spots (8)	-	1%	-	0.5%
Volute (9)	4%	9.5%	-	-

Fig. 14. Frequency in occurrence of <u>single geometric motifs</u> on metates (only a single appearance is counted per metate, even if a motif occurs in multiple places on any one specimen)

The cross (1) motif is encountered extremely rarely on any metate type. It has probably no specific meaning in the isthmian iconography except as a 'fill-in' figure which is relatively easily executed.

The ring (2) motif occurs sporadically on MPM2 (effigy multipurpose) metates, sometimes in pattern form on rims or legs, and at other times as a single decorative element on the neck, head or tail of effigy metates. Rings do not appear at all on SPM (special purpose), nor on MPM1 (non-effigy multipurpose) metates.

Rings with spots (3) are also rare and appear only very occasionally as a single feature on rim, head or legs of SPM2 (effigy special purpose) and MPM2 (effigy multipurpose) metates. The motif is totally absent from SPM1 and virtually absent on MPM1 (non-effigy) types.

The ring with rosette (4) motif is extremely rare and appears in my sample solely on legs of effigy metates (MPM2.L4), and once only on a tail. If the rosette was indeed intended to represent a flower, it would be a unique feature in the iconography of isthmian metates, as there is no other instance, to my knowledge, where a plant is illustrated.

The ring with star (5) motif is an even greater rarity and occurs in my sample only on three MPM2.L4 (effigy multipurpose) metates where it appears on the legs and, in one case, on the tail.

Loops (6) occur relatively seldom. The motif is totally absent on SPM1 (non-effigy special purpose) metates, but appears sometimes on heads of SPM2 (effigy special purpose) types. Loops are very occasionally represented in the decorative pattern of rims of both MPM1 and MPM2 (non-effigy and effigy multipurpose) types, and in a rare instance the motif can be found on a tail or leg of MPM2 metates.

Spirals (7) are infrequent and are found only on effigy metates. On SPM2 (special purpose) types the spiral motif occurs on rare occasions only in the

openwork decoration of legs. It is infrequent too on MPM2 (multipurpose) types with the exception of the group consisting of double-headed, looped reptilian effigy metates where the spiral seems to be an integral element. It occurs as the curling tail-end of looped elements which emanate from the heads at each end of the metate like the bifurcated tongue of a snake.

The motif of a spiral with spots (8) is a complete rarity and occurs twice only in my sample, once incorporated in the openwork decoration on the trapezoidal legs of a SPM2 (effigy special purpose) metate, and once on the legs of a reptilian effigy metate (MPM2).

Volutes (9) are an infrequent motif as well and occur only on SPM (special purpose) metates, both on non-effigy and effigy types, where the motif appears in the openwork decoration of trapezoidally-shaped legs.

Motifs repeated in Pattern Form

This group is extensive (fig. 15) and contains a varied list of 22 different patterns (numbered in brackets from 10 to 31) ranging from simple linear elements to distinctly intricate designs. With the exception of two motifs - perforations and nubs - they are all executed in either low or high-relief technique. Perforations, as the term implies, are carved in openwork fashion. Nubs, on the other hand, are modelled three-dimensionally.

Incised spots (10) are extremely rare and appear only on a few SPM2 avian effigy metates. They are pecked in sections to form a regular spotted pattern marking out the area around the birds' eyes to look like a fine plumage. Such spots do not occur on any other metate types.

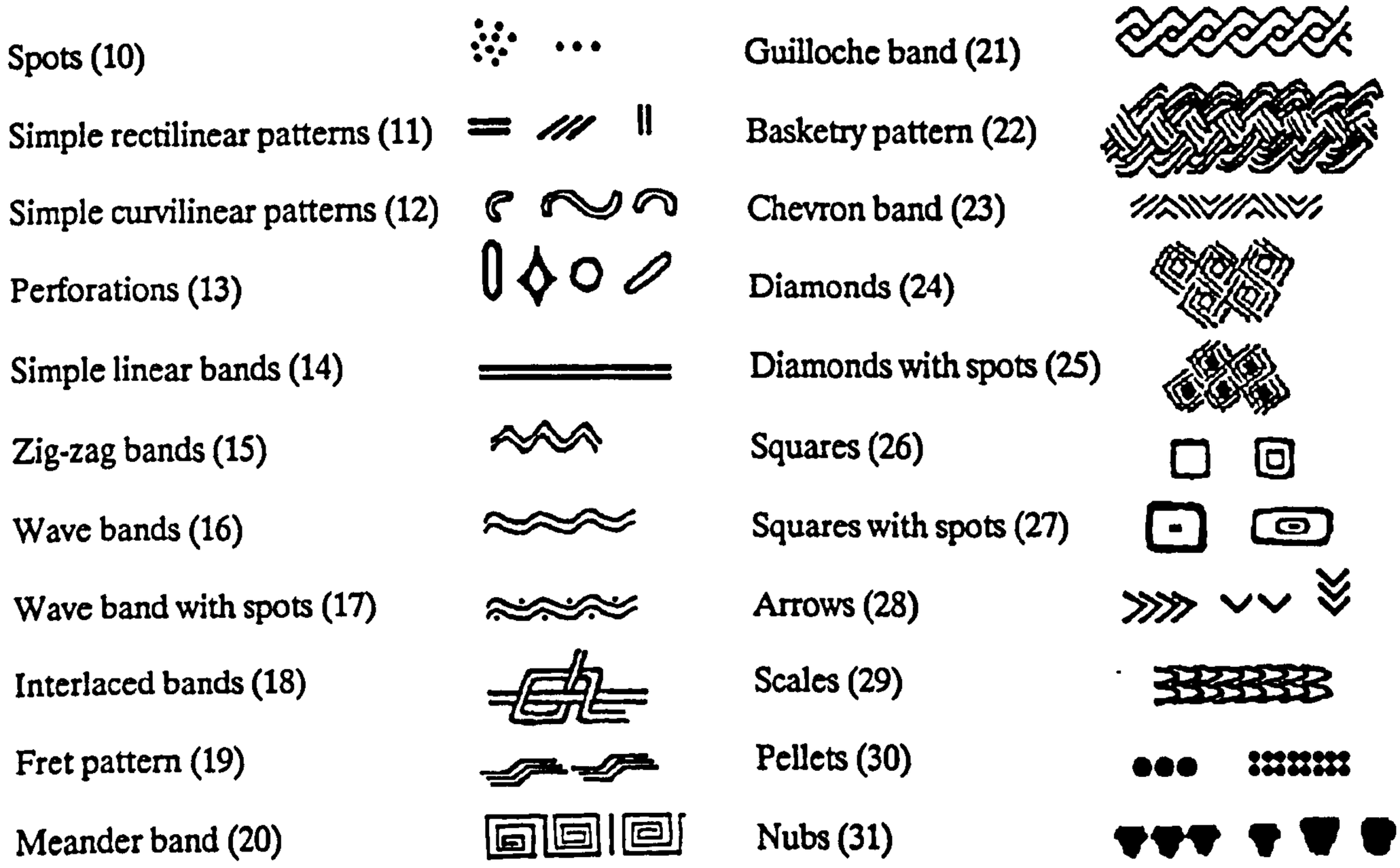


Fig. 15. Geometric motifs repeated in pattern form

The ubiquity of simple rectilinear patterns (11) is probably due to the fact that it is a relatively easy form of decoration to execute. However, it is interesting to note that such patterns are most popular on the three-legged SPM types (special purpose metates), especially on SPM1.L3/CON, SPM1.L3/TRA and SPM2.L3/TRA, where the decoration appears principally on the legs and also on grinding plates above and below, as well as sometimes on rims and heads.

Rectilinear patterns appear rarely only on three-legged MPM1 types (non-effigy multipurpose metates), never on four-legged MPM1 types and just occasionally on pedestal-, or atlantean-, or figural-supported MPM1 types. They occur more often on four-legged MPM2 types (effigy multipurpose metates), especially on heads, but also on rims, tails and legs. Some of the hour-glass shaped types (MPM2.PE/BIC) also display rectilinear decorations on the rim.

Simple curvilinear patterns (12) are less popular than rectilinear ones. They occur most frequently on SPM types (special purpose metates), in particular on the heads of the three-legged reptilian effigy metates with angular legs (SPM2.L3/ANG(REP) where the curved lines help to emphasize the alligator and snake features. Curvilinear patterns occur seldom on other SPM types, hardly at all on SPM1 types and only occasionally on SPM2.L3/TRA types where they appear mainly on heads and legs.

Curvilinear patterns are completely absent from MPM1 (non-effigy) metates and rare on MPM2 (effigy) types where they appear variably on rims, heads, tails or legs.

Circular, oblong and other perforations (13) occur on virtually all the trapezoidally shaped legs of both SPM1 and SPM2 (non-effigy and effigy special purpose) metates and also on the heads of those SPM2 (effigy) types which have trapezoidal or angular legs.

On MPM1 (non-effigy multipurpose) types, perforated motifs occur only in the hollowed-out base of pedestal-supported metates where they appear in the form of long vertical slits or in diamond form to give the pedestal a lattice-like appearance. Perforations occur hardly ever on MPM2 (effigy multipurpose) metates.

Simple linear bands (14) are virtually absent from SPM2 (effigy) types, but occur relatively often on the underside of SPM1.L3/CON metates where they frame the geometric patterns or effigies carved into the plate. On four-legged MPM1 and MPM2 types linear bands appear mainly on grinding top rims delineating the space for border decorations or following the contour of the grinding top, often in conjunction with a 'nubbed' pattern (31) or with small human heads (A) carved three-dimensionally around the rim.

Motif	SPM1 (76)	SPM2 (107)	MPM1 (222)	MPM2 (242)
Spots (10)	-	4.5%	-	-
Simple rectilinear patterns (11)	77.5%	46.5%	5%	28%
Simple curvilinear patterns (12)	18.5%	39.5%	-	8.5%
Perforations (13)	63%	86%	11.%	1%
Simple linear bands (14)	21%	1%	15%	18.5%
Zig-zag bands (15)	2.5%	14%	2%	12.5%
Wave bands (16)	-	3%	-	3%
Wave bands with spots (17)	-	-	-	0.5%
Interlaced bands (18)	26.5%	15%	-	-
Fret pattern (19)	4%	19.5%	2%	3.5%
Meander band (20)	44.5%	48.5%	2.5%	5.5%
Guilloche band (21)	17%	10%	7%	22%
Basketry pattern (22)	23.5%	12%	0.5	-
Chevron band (23)	8%	3%	2.5%	14%
Diamonds (24)	1.5%	6%	3.5%	43.5%
Diamonds with spots (25)	2.5%	1%	0.5%	5%
Squares (26)	-	4.5%	-	1%
Squares with spots (27)	2.5%	4.5%	0.5%	-
Arrows (28)	4%	10.5%	-	3%
Scales (29)	-	1%	-	9%
Pellets (30)	2.5%	10%	9%	8.5%
Nubs (31)	-	1%	49%	7%

Fig. 16. Frequency in occurrence of geometric motifs repeated in pattern form on metates (only a single appearance is counted per metate, even if a motif occurs in multiple places on any one specimen)

Zig-zag bands (15) are rare and occur hardly ever on non-effigy SPM or MPM metates. They appear occasionally on effigy metates, e.g. on the SPM2.L3/TRA/OFR types where zig-zag lines occur variably above or below the grinding plate, or on rim, heads or legs; also infrequently on four-legged MPM metates, especially on feline effigies where they decorate rims, heads or tails.

Wave bands (16) occur extremely rarely and have only been found on a small number of four-legged feline effigy metates.

A wave band with spots (17) was located once only on a singular four-legged feline effigy metate.

Interlaced bands (18) are associated with SPM (special purpose) metates only and appear most frequently as a decoration on the underside of three-legged non-effigy types, especially on those which have legs in trapezoidal form. The pattern is reminiscent of Mesoamerican basketry work, although not as defined as some decorations on other SPM metates which clearly imitate basketry weaves and are listed here under 'basketry' patterns. Interlaced bands do not occur at all on MPM (multipurpose metate) types.

Patterns of fret designs (19) are rare on SPM1 (non-effigy special purpose) metates, but fairly common on SPM2 (special purpose) specimens where they ornament the rims of the grinding plates. They are almost completely absent on MPM1 (non effigy multipurpose) metates and appear rarely only on the rims of MPM2 (effigy) types.

So-called meander (20) patterns are almost exclusive to SPM (special purpose metate) types where they occur both as decorative bands at the front and/or back ends of grinding plates, and sometimes on the underside as a border all the way around. In addition, meander patterns often ornament the rims of grinding plates, especially those of effigy metates (SPM2.L3/TRA/OFR and SPM2.L3/ANG). Sometimes meanders appear

also in the decoration of trapezoidal legs which are carved in openwork fashion.

Meander patterns do not appear at all on three-legged MPM1 (non-effigy multipurpose) metates and only rarely on pedestal-, figural-, or atlantean-supported specimens. They can be found on rims of MPM2 (effigy multipurpose metate) types, but only very seldom.

Guilloche (21) bands are relatively frequent decorations on grinding plates of SPM1 (non-effigy special purpose) metates, more often on the underside than above, framing a carved effigy. They occur rarely on SPM2 (effigy special purpose) metates, except on some specimens with trapezoidal legs where this decoration is combined with some intricate openwork carving.

MPM1 (non-effigy multipurpose) metates rarely display guilloche decorations, with the exception of some ring-based atlantean-supported and pedestal-based specimens where guilloche bands ornament the rims. They are well represented on MPM2 (effigy multipurpose) metates, however, in particular on rims, and sometimes also on the tails, of feline effigies. Guilloche bands could be said to look rather like braided ribbons in basketry patterns, especially when the strands are duplicated or triplicated, but they are also thought by some people to represent a stylized version of intertwined serpents.

Decorative patterns seemingly imitating basketry (22) weaves occur only on SPM (special purpose metate) types, principally on non-effigy specimens with trapezoidal legs. They appear carved in form of bands at the front and back ends of grinding plates, usually as a wider band at the front and a narrower one at the back. Such bands are reminiscent of the woven-mat pattern on Classic Maya pottery where it represents a symbol of high rank.

Chevron (23) patterns are rare on SPM (special purpose metate) types. They occur just occasionally on rims of non-effigy specimens or incorporated in a

decorative band at one end of a grinding plate. Chevrons hardly ever appear on rims of MPM1 (non-effigy multipurpose metate) types, but can be found in the decoration of MPM2 (effigy) types, in particular on the rims of grinding tops of feline effigy metates.

The diamond (24) pattern is virtually absent from both non-effigy SPM (special purpose) and MPM (multipurpose) metates. On SPM2 types (effigy special purpose metate) diamonds appear occasionally on headfronts. However, the diamond pattern is probably the most common embellishment on MPM2 (effigy multipurpose metates) types, where it occurs principally on heads, tails and legs of feline effigies. This association leads to the conclusion that diamond elements are probably meant to depict the skin of jaguars.

Patterns of diamonds with spots (25) are much rarer and virtually absent from SPM1 and SPM2 (non-effigy and effigy special purpose metates) types. They occur sporadically, however, on the rim, head, tail or legs of MPM2 feline effigy metates. This pattern obviously represents an elaboration of the basic diamond design.

Squares (26) are uncommon and occur just occasionally on rims or heads of SPM2 (effigy special purpose) metates and MPM2 (effigy multipurpose) types. They were probably intended as decorative 'fill-in' elements.

Squares with spots (27) are also rare and occur only sporadically on rims or in decorations above or below grinding tops of SPM1 and SPM2 (effigy and non-effigy special purpose) metates. They are totally absent from MPM (multipurpose) types.

Arrows (28) occur occasionally as part of a decorative band on rims of grinding plates of SPM (special purpose) metates with trapezoidal legs, specially on effigy types. Arrows can also be found sometimes on the head or legs of effigy metates emphasizing certain features. Arrows are completely

absent from MPM1 (non effigy multipurpose) types, but appear sporadically on heads of MPM2 feline effigy metates.

Scales (29) as a pattern do not normally occur on SPM (special purpose) metates, or on MPM1 (non effigy multipurpose) types. But the tails of MPM2 (effigy multipurpose) metates are quite often covered with a seemingly scaley skin depicted in a pattern and carved generally in high-relief fashion.

Pellets (30) are also relatively rare. In contrast to spots (10), they are generally excised. They appear on some SPM2 avian effigy metates in the same way as incised spots, as explained earlier. However, the most common occurrence of pellets is as decorative bands in single and double rows around the rim of four-legged MPM1 (non-effigy multipurpose) and MPM2 (effigy multipurpose) metates; on the latter pellets can also be found very occasionally on heads or legs.

Nubs (31) appear on most three-legged MPM1 (non-effigy multipurpose) metates of all types, almost to the exclusion of anywhere else. Nubs are virtually absent from SPM (special purpose) metates and occur only seldom on the rim of a few MPM2 (effigy multipurpose) specimens. On three-legged MPM1 types, nubs are carved as three-dimensional protrusions bordering the rim of grinding tops or, sometimes, rims are simply notched. Nubs and notches vary in size from very small to fairly prominent and are sometimes closely set and at other times spread out. It is possible that they represent stylized human heads or symbols of heads. Some metates in fact display naturalistic heads carved around the rim of grinding tops, and notches could therefore imitate this aspect in a stylized fashion.

2. Anthropomorphic and Zoomorphic Motifs and Figures

Anthropomorphic and zoomorphic features are probably the most immediate source of cultural information we can obtain in relation to decorated metates. They can 'speak' more directly than semiotic motifs. Such figures are often carved most expressively in three-dimensional fashion offering various clues not only about the importance of certain species indicated by the frequency of their occurrence, but also telling us, especially in composite form, about particular aspects related to the human and animal world and the isthmian cosmos. I refer here in particular to themes such as humans wearing animal masks or long-beaked birds associated with human heads.

In general, anthropomorphic and zoomorphic motifs and figures are modelled three-dimensionally; representations in low or high-relief technique are rare. They occur mostly as single elements, although some motifs can also be found repeated in pattern form.

The motifs and figures included here are those which occur purely as embellishments on effigy and non-effigy metates, independently from the type of effigy represented in the overall appearance which determines a metate type. Eight different groups (listed as A to H) can be distinguished. Apart from the group of anthropomorphic and another of half-human/half-animal figures, motifs related to five different animal species can be isolated. In addition there is a group of zoomorphic motifs and figures of unidentified species.

Anthropomorphic motifs and figures (A) occur sometimes on SPM1 (non-effigy special purpose) metates; the tripods with conical legs display occasionally naturalistic or stylized human effigies carved into the underside of grinding tops. On SPM2 (effigy special purpose) types the anthropomorphic motif is totally absent. It is represented frequently,

however, on MPM1 (non-effigy multipurpose) metates, especially in the imagery of the three-legged flying-panel metates where human figures appear sometimes carved three-dimensionally standing on the horizontal bars of flying-panels or as effigies joined to the legs of some specimens.

Human heads also appear in the imagery of flying-panel metates, sometimes held in long beaks of vulture-like birds or in the paws of felines. Human heads occasionally line the edge of platforms of such metates (in pattern form) and appear quite often on four-legged MPM1 types.

Motif	SPM1 (76)	SPM2 (107)	MPM1 (222)	MPM2 (242)
Anthropomorphic (A)	10%	-	32%	3.5%
Half-human/half-animal (B)	-	1%	9.5%	-
Avian (C)	2.5%	-	19%	-
Feline (D)	-	1%	17%	3%
Frog (E)	-	-	0.5%	-
Reptilian (F)	6.5%	3%	5%	0.5%
Simian (G)	5.5%	1%	11.5%	4%
Unidentified zoomorphic (H)	1.5%	-	5%	1.5%

Fig. 17. Frequency in occurrence of anthropomorphic and zoomorphic motifs and figures on metates (only a single appearance is counted per metate, even if a motif occurs in multiple places on any one specimen)

As mentioned earlier, the three-dimensionally carved 'nubs' listed under 'Motifs repeated in Pattern Form' (31), which border the rims of many three-legged and also four-legged MPM1 (non-effigy multipurpose) metate tops, may in fact represent stylized human heads. If this is so, it would mean that the anthropomorphic motif is present virtually on all types of MPM1

(non-effigy multipurpose) metates. A few specimens also display human heads in openwork panels carved between the legs and others have human heads carved at each end of the grinding top like decorative handles.

In contrast to the ubiquity of anthropomorphic motifs or figures on MPM1 (non-effigy multipurpose) metates, there is virtually no occurrence of either associated with MPM2 (effigy) types; only a very few specimens have human heads displayed on rims or legs.

Half-human/half-animal figures (B) are totally absent from SPM (special purpose) metates. They occur frequently, however, in the imagery of flying-panel metates, MPM1.L3(FP+), where the central figure in the panel is often a human with a bird, alligator or monkey head or, perhaps, masked as such. Half-human/half-animal figures are otherwise rare on metates. Occasionally the four legs of MPM1 (non-effigy multipurpose) metates are in the form of such figures; also the atlantean figures of some of the ring-based metates are sometimes half-human/half-animal in appearance, as well as the figures in some of the figural-supported MPM1 and MPM2 (non-effigy and effigy multipurpose) specimens. On the whole, this theme is relatively rare in the iconography of metates.

The avian motif (C) is absent from both SPM2 (effigy special purpose) and MPM2 (effigy multipurpose) metates. However, it can be found occasionally on SPM1 metates with three conical legs, where images of birds appear sometimes carved into the underside of grinding plates.

The avian motif is more common on MPM1 (non-effigy multipurpose) types, especially in association with flying-panel metates where birds are prominent in the imagery represented. As mentioned in the paragraph above, composite human/bird figures are often depicted in the panel. Large birds with outspread open wings appear as well, and vultures feature often joined to the legs of these metates and holding human heads in their long beaks.

The protrusions carved three-dimensionally into the underside of the three unusual tripods in the MPM1.L3(PRO) group also appear to be birdheads, and the surmounts at each end of the grinding top of four-legged metates, MPM1.L4(SUR), sometimes seem to represent small birds.

Feline motifs and figures (D) occur only on MPM (multipurpose) metates, and more so on non-effigy than on effigy types. Felines appear on occasions in the imagery of openwork flying-panel metates, sometimes associated with human heads. Feline motifs occur frequently in decorative patterns on rims of pedestal-based metates, MPM1.PE., where they are carved in the form of little jaguar heads lining the edge of the grinding top. In rare cases the rims have a border with fully-modelled small jaguars hanging down from the edge.

Felines act frequently as the basic supports of figural-supported metates.

Feline motifs or figures occur rarely on MPM2 (effigy multipurpose) metates with the exception of animal-supported specimens where three out of five examples listed in the corpus rest on felines.

Frog figures (E) are a great rarity, and so far I have only found one single example, a MPM1.FS (a figural-supported non-effigy multipurpose metate) where the grinding plate is carried by two frogs standing on their back legs.

Reptilian motifs and figures (F) are relatively rare. SPM1 (non-effigy special purpose) metates with three conical legs occasionally have reptilian effigies carved into the underside of the grinding plates. Sometimes the head or limbs are incorporated three-dimensionally into the metate legs.

Reptilian motifs are seldom associated with SPM2 or MPM2 (effigy special purpose and effigy multipurpose) types, but occur from time to time on MPM1 (non-effigy multipurpose) metates. On flying-panel metates the central human figures displayed in the panel sometimes wear alligator masks; snakes as well as other reptilian creatures often appear in the imagery of such

metates. Snakes appear sometimes also wound around the legs of such metate types.

Reptilian motifs are virtually absent from MPM2 (effigy multipurpose) types, except in association with the gigantic figural-supported metates (MPM2.FS); on one such figure snakes appear prominently on the body, wound around each of the four limbs.

Simian figures (G) occur seldom on either SPM (special purpose) or MPM2 (effigy multipurpose) metates. But SPM1 (non effigy) metates with three conical legs occasionally display monkey effigies on the underside of the grinding plate.

The occurrence of the ears of a reptilian effigy metate (SPM2.L3/FSL) being carved in form of small stylized squatting monkeys could only be recorded on a single specimen; otherwise simian figures seem to be absent from SPM2 types.

Monkeys occur in the imagery of flying-panel metates, MPM1.L3(FP) and (FP+), but not as frequently as avian and reptilian effigies. On the other hand, most specimens in the small group of four-legged metates with panels linking the legs front and back, MPM1.L4(SUR/PAN), have monkeys as the central figure in the panels which are carved in openwork fashion. Also, all five metates in the small group of animal-supported specimens (MPM1.L4/AS) have simian figures holding up the grinding top, and the atlantean figures on ring-based metates (MPM1.ATL/RB) are often monkeys too.

Simian figures are rarely associated with MPM2 (effigy multipurpose) metates. They do appear in the panels linking the legs of feline and reptilian effigy metates, in the same way as in the MPM1 types with panels. Also, in the small group of figural-supported effigy metates (MPM2.FS) two of the

four gigantic bodies with metates carved out of their abdomen have simian heads or wear simian masks.

A small number of metates have unidentified zoomorphic motifs or figures (H), in particular amongst the MPM (multipurpose non-effigy and effigy) types. On certain MPM1.L3(FP) types, for instance, animals which appear carved three-dimensionally in the flying-panel are difficult to identify. Also some pedestal-based MPM1 (non-effigy multipurpose) types have the rims of grinding plates bordered with zoomorphic heads which are difficult to identify; most likely they are feline heads. A similar problem occurs with some MPM2 (effigy) types where unidentifiable zoomorphic motifs appear on rims and legs.

3. Appendages

Two kinds of recurring motifs appear in form of appendages:

Marimba pipes (fig.18) and

Crests (fig.19a and b).

Marimba pipes are so called because they resemble the resonators of a marimba instrument. They are in fact elements which project from the underside of 'marimba' type metates, MPM1.L3(MAR). They occur solely on that type.

Crests appear in the form of surmounts exclusively on four-legged MPM1 (non-effigy multipurpose) metates. They are carved three-dimensionally at each end of the grinding plate as if to form lugs or handles. Some of these

surmounts are modelled to look like small emblems with a tassel. Alternatively, they could represent bird motifs, i.e. the plumage from the back of a bird. Occasionally, the upper part of surmounts in fact protrudes from the rim into the grinding plate like a birdhead with a longish beak.

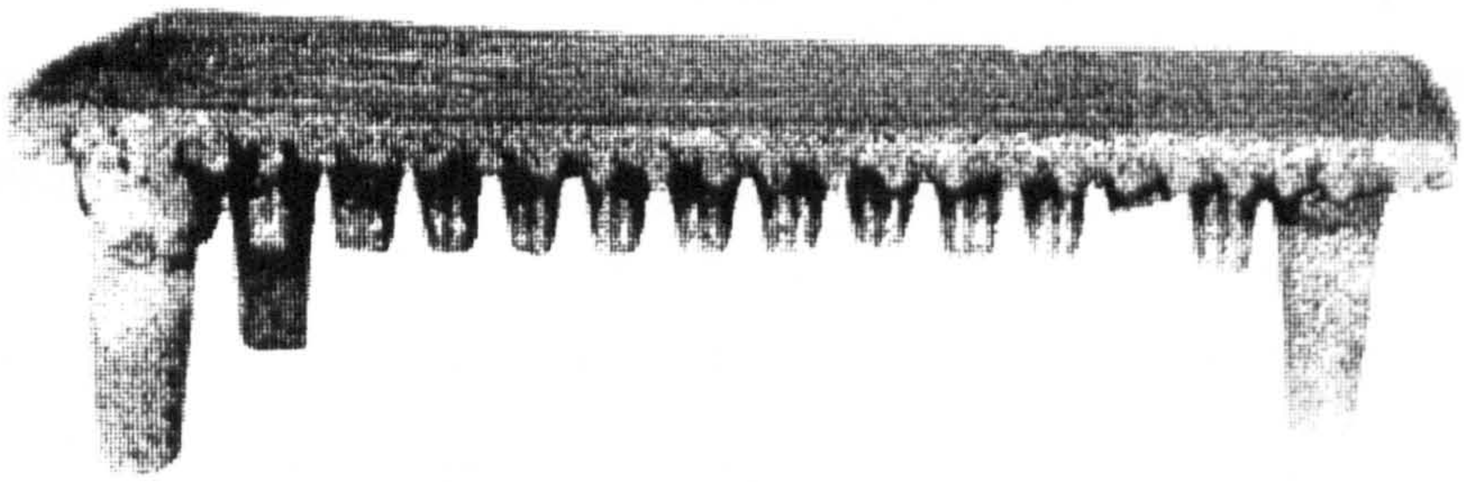


Fig.18. Metate with marimba pipe-like projections

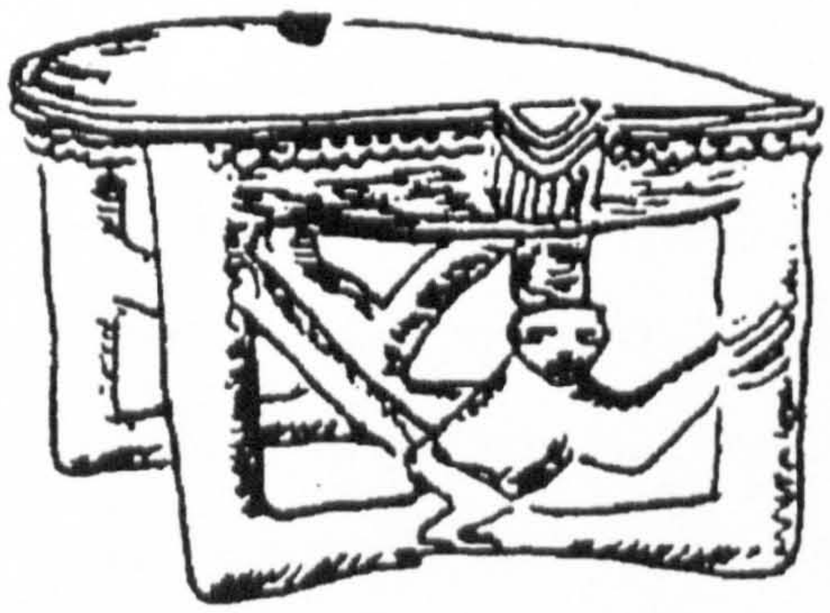


Fig.19a Metate with surmounts in form of crests

Fig.19b. Crest inset from fig.19a.

4. Summary Note

A look at the diagrams listing the rates of frequency in occurrence of decorative patterns and motifs on metates reveals that only a few elements occur at really high rates. It is noticeable too that, when a frequency rate is high for SPM (special purpose) metates, it is usually low or even non-existant for MPM (multipurpose metate) types, or vice versa.

STYLISTIC FEATURES

At the beginning of this chapter, the significance of stylistic treatment associated with isthmian metates is discussed. It is suggested that elaborately decorated metates offer valuable information, not only by indicating cultural patterns in space and time, but also by showing up possible contacts and links on a wider inter-regional basis. Effigy metates in particular represent a case in point, and specific decorative motifs and patterns can also serve as helpful indicators of possible cultural relationships.

1. Effigy Metates

Effigy metates undoubtedly represent a unique stylistic feature of Lower Central America. It is interesting to observe how and where they appear through time. The earliest specimens (SPM2.L3/TRA) occur in Greater Nicoya during late Period IV/early Period V. They are not, as would be expected of an early type, produced roughly or crudely, but represent creations of highly skilled artisans who clearly had an outstanding sense of style and an artistic vision. We can assume that this vision was inspired by the world around them and that some of the intricate iconography illustrates elements of ancient belief systems.

Evidence of finely worked jade artifacts dating from the early centuries AD confirms that achievements in the lapidary arts as well as in stone sculpture

were of a unusually high standard at that early stage in Lower Central American history.

Among the SPM2.L3/TRA group, bird effigies are relatively numerous and appear to outnumber other effigy metates which include feline as well as canid and reptilian effigies. The majority of bird effigy metates of late Period IV/early Period V are from the Greater Nicoya cultural zone, but a few examples are known also from some parts of the Northern Zone (see Chapter II , p.59,60); these are of a slightly later date. Although birds and bird motifs figure significantly in the decoration of late Period IV metates from Central Costa Rica, and to a minor degree also on early Period V metates from Greater Chiriqui, bird effigy metates as such do not occur in those cultural regions. They are confined in time and space principally to a Greater Nicoyan cultural tradition.

The bird effigies are often very realistically carved and appear to represent mainly species of the aggressive kind, including macaws, harpy eagles, toucans and curassows. Since tropical birds such as these are known from all over Lower Central America, but occur in the treatment of effigy metates only in a limited area, it could mean that they were created deliberately to represent cult animals or emblems of a particular group. Jade pendants with avian heads and stone mace heads in bird form are contemporary with the bird effigy metates in the Greater Nicoyan cultural area and confirm that the avian symbol must have been of special importance there.

Another feature separating the bird effigies from other Greater Nicoyan effigies relates to their heads which are usually solid, although realistically modelled with details well-defined in low or high-relief technique, including e.g. a sophisticated manner of imitating the plumage (see earlier in this chapter, page 146). The heads of other effigy metates in Greater Nicoya, in contrast, appear mostly hollowed out and carved intricately in openwork fashion. Heads as well as legs of coyote and alligator effigies in particular

display 'filigree' carving in a spectacular way. Superbly elaborate decorative patterns on heads, necks, rims and legs on these metates represent a unique feature in isthmian sculpture, - sometimes almost 'baroque' in effect. Some motifs, such as the volutes and curvilinear designs, seem to have a parallel only in the iconography of Veracruz, in the stone friezes at El Tajin where scrolls represent "the basic and most distinctive element of Classic Veracruz style" (Kampen, 1972:189 and figs.3b,13k,16a).

These differences in stylistic treatment certainly suggest a non-identical background of the metate makers. The difference could be time, but not enough is known chronologically at present. It is, however, not inconceivable that these metates belonged to separate groups within the Greater Nicoya cultural zone, groups who had preferences for specific animals, treating them as their culture heroes and using them as their emblems.

The only link between effigy metates from the Greater Nicoya area and those from the Northern Zone is the rimless, rectangular, slightly curved form of the grinding top (SPM). The examples from the Northern Zone (SPM2.L3/ANG) are later in date than the specimens from Greater Nicoya. They belong to late Period V and Period VI. Also, apart from having solid angular instead of trapezoidally shaped 'filigree' legs, the majority occur with effigy heads of a totally different style. They are basically solid, but finely modelled with features outlined in a flowing manner in high-relief carving. In general they represent a stylized effigy of a reptilian creature with a mixture of alligator and snake features. The mouth is usually open with the tongue shooting out, curling upwards, and thus forming a loop. Although the effigy head as such, in association with a metate, represents a characteristic Lower Central American feature, the stylistic treatment of it here suggests affinities with Mesoamerican serpent heads, e.g. at the Pyramid of the Plumed Serpents in Xochicalco (Heyden and Gendrop, 1980:165) and at the Templo

Mayor in Mexico-Tenochtitlan (Portillo et al., 1981:188-189); also with the Aztec fire-serpent 'Xiuhcoatl' (Baquedano, 1984:70-71).

A unique style was developed with the hourglass-shaped effigy metates (MPM2.PE/BIC) which were manufactured during Period VI in the Greater Nicoyan cultural area. Stylized reptilian effigies with prominently sculpted snouts are integrated with solid biconical pedestals which are usually embellished top and bottom with incised geometric patterns. The slightly concave top served in all probability both as metate and seat. Stylistically the few specimens known are all very similarly treated. They could have been the creation of a single artisan and belonged to a group who had the alligator or crocodile as their cult or protector animal, or just as their status symbol or emblem. Spectacularly modelled reptilian effigies on ceramic incensarios from the same region, although of an earlier date, suggest a similar association.

A completely different effigy metate style appears during Period VI in the Central Costa Rican cultural zone (MPM2.L4) where effigy metates were manufactured in great abundance after AD 1000. In somewhat smaller quantities such specimens were made at the same time also in the Greater Chiriquian cultural zone. These effigy metates are exclusively four-legged, in contrast to the earlier Greater Nicoyan tripod metates. The jaguar is by far the most frequently represented animal, although reptilian effigies occur sometimes, and a few rare specimens include anthropomorphic effigies. The grinding area of these effigy metates is integrated into the animal's back, concave or flat and rimmed, and in general, the heads, limbs and tails are naturalistically sculpted and mostly decorated with incised geometric patterns. A distinctive feature is displayed by the tail which is generally long and slender and attached to one of the hindlegs, thus forming an elegant loop. Double-headed examples and metates with panels between the legs occur as well, but the stylistic treatment is basically the same in all the

varieties. This very distinctive metate type indicates that a singular tradition prevailed in a relatively large area during more than five centuries, until the Spanish arrival.

I have included the giant-size reclining effigy figures (MPM2.FS) from Atlantic Watershed Costa Rica as metates, since the basin which is incorporated in their abdomen could have served as a grinding bowl. The figures have human or ape-like bodies with avian or simian heads. Although nearest in concept to the masked figures displayed in the panels of late Period IV 'flying-panel' metates (see under 'Zoomorphic Motifs and Figures' later in this chapter), they belong in style to late Period VI. Stylistically they continue a tradition in which features of animals and humans are combined, or in which humans wearing animal masks are portrayed. Such images are also present in the iconography of jade artifacts and pottery during late Period IV and Period V, and of isthmian gold artifacts during late Period V and Period VI.

Effigy metates are completely absent from areas further south, from eastern Veraguas to the Panama Canal, i.e. they occur neither in the southwestern part of the Greater Chiriqui cultural zone nor in Central Panama.

2. Anthropomorphic Figures and Motifs

Representations of human heads and figures in the decoration of metates occur mainly in the cultural zones of Central Costa Rica and Greater Chiriqui, although some bizarre anthropomorphic effigies can be found in Greater Nicoya on the underside of grinding plates of metates belonging to

late Period IV (SPM1.L3/CON(EFF)). These figures are carved in low-relief, often highly stylized and sometimes adorned with zoomorphic trimmings. The fact that these elaborately carved effigies appear on the bottom of the plate is intriguing and suggests that, when the metates where not in use, they were put leaning with their grinding platform against a wall to allow for the effigies to be seen. Undoubtedly the images were meaningful but, unfortunately, the symbolism is unknown to us. Stylistically these early Greater Nicoyan metates represent a unique group and, to my knowledge, it is the only occurrence in prehistoric isthmian iconography of anthropomorphic figures in low-relief carving; in all other cases anthropomorphic motifs are carved out, i.e. sculpted in three-dimensional fashion, not incised. It is perhaps noteworthy that archaeological surface collections in looted cemeteries in Greater Nicoya have suggested that such metates were associated with pottery, also displaying incised decorations, such as Rosales Zoned Engraved which is contemporary with the metates discussed above, dated to c. AD 1-300 (Snarskis, 1981:189).

After AD 500 no human effigies of any sort appear on metates in Greater Nicoya.

In contrast, anthropomorphic motifs galore occur in Central Costa Rica from late Period IV right through to Period VI, but in a totally different stylistic treatment. Human heads carved in naturalistic or stylized form around rims are most frequent. Many of these heads are well-defined, although the majority are represented just by small nubs or notches which are thought to be stylized heads since they imitate the same mode of decoration. The earliest appearance of heads or nubs on rims can be found in association with three-legged rectangular, oval and circular metates (MPM1.L3) and in particular also with 'marimba' (MPM1.L3(MAR)) and 'flying-panel' (MPM1.L3(FP+)) metates in late Period IV Atlantic Watershed Costa Rica. (The 'heads on metates' theme is discussed in more detail in Appendix 1.).

The mode of using the head in the decoration of rims on grinding plates suggests that it was a common theme among people in Central Costa Rica. Stylistically, the societies associated with the spectacular 'flying-panel' metates, however, went a lot further in the use of anthropomorphic images. Decapitated heads appear in long beaks of vulture-like birds or in the paws of felines and, sometimes, human figures are displayed in the 'flying-panels' or incorporated with the legs. Often these figures wear bird or alligator masks. A possible background to this complex mixture of images is discussed in Appendix 1 under the heading 'Metates in Ritual Context'.

Although related somewhat to the Central Costa Rican examples, the slightly later 'flying-panel' metates of Western Veraguas (MPM1.L3(FP)), Greater Chiriqui cultural zone, display a different stylistic treatment. The little heads around the rim - if indeed the nubs represent heads - never have naturalistic features. On the other hand, the human effigies carved into the 'flying-panels' are often realistically conceived figures, mostly depicted in action, blowing or carrying something. In contrast to the complex Central Costa Rican examples the style here is simple and direct.

On some metates from Central Costa Rica and also from Greater Chiriqui, on the other hand, the human motif appears in a different and more sophisticated way. I am referring to the metates from the Central Highland area in Costa Rica and, in particular, to the giant oval metates known from the Barriles area in Greater Chiriqui (MPM1.L*4*/HS). In contrast to the anthropomorphic figures and motifs displayed in the complex imagery of 'flying-panel' metates from Central Costa Rica, which always appear associated with reptilian or feline creatures, the theme on the elegantly modelled metates from Highland Costa Rica and Greater Chiriqui is solely concerned with human features. Apart from realistically carved heads which ornament the rim, the metates themselves are generally supported by fully modelled human figures, sometimes represented in a subservient manner

with arms held over the chest, and at other times clasping a head, or with upraised arms seemingly carrying trophy heads. Chronologically, the specimens from Barriles are dated to very late Period IV/early Period V, whereas those from Highland Costa Rica are thought to be later, belonging to Period V/early Period VI. The latter are generally smaller in size and have, sometimes, plain legs. However, the stylistic similarity suggests some kind of a link between the two areas.

Carved heads on rims of grinding plates continued to be a feature on metates, including pedestal-based ones, both from Central Costa Rica and Greater Chiriqui until circa AD 1000, mostly in stylized form. After that time, however, during Period VI, the carved head motif virtually disappeared from metates. But human figures as metate supports, mainly in atlantean style, became a feature in Central Costa Rica and, sporadically, in Greater Chiriqui during Period VI. The style in embellishing metate rims also changed in that time from nubs or heads modelled three-dimensionally to geometric patterns carved in low-relief. The fact that the head motif on rims occurred hardly at all after AD 1000 is curious, since it was just at this time that freestanding statues, often depicting bound prisoners or warriors carrying trophy heads, became fashionable.

3. Zoomorphic Figures and Motifs

The varied stylistic treatment of zoomorphic effigies in the overall form of the isthmian metate has been shown earlier in this chapter. Equally varied in style through space and time are the zoomorphic figures and motifs which occur in the decoration of metates.

Only four different groups of animal species appear regularly in the isthmian iconography: birds, felines, reptilian and simian creatures. They all form part of the tropical environment in the isthmian region and probably represented important elements in the belief systems of local societies in prehistoric times, as is still the case today among surviving Indian tribes. People in ancient times included such creatures in their iconography for the specific qualities they incorporate: the bird for its keen sight and high flight, the feline and reptile for their omnipotence on land and in water, and the monkey for its cunning.

Although feline effigy metates occur in Greater Nicoya during late Period IV/early Period V, the feline motif in the decoration of metates seems to be absent in this particular cultural zone. Only alligators and monkeys, and very occasionally birds, appear in stylized representations, carved in low or high-relief on undersides of grinding plates of metates dating to late Period IV (SPM1L3/CON(EFF)). Stylistically these incised or excised images are unique, since the representation of zoomorphic figures and motifs in the decoration of isthmian metates otherwise is generally in three-dimensionally sculpted form.

Birds are in much evidence in late Period IV Atlantic Watershed Costa Rica on the so-called 'flying-panel' metates (MPM1.L3(FP+)). Reptilian, simian and feline creatures figure too, but the avian motif seems particularly prominent and was clearly of specific importance. Large birds with open wings as well as composite human/bird figures, or humans with bird masks, appear as images in the panels, carved in three-dimensional openwork fashion. Realistically carved birds, or just bird heads, with long beaks are often joined to the legs, usually associated with human heads or bodies. (Likely cosmological associations are discussed in Appendix 1 under the heading 'Metates in Ritual Context'.) Stylistically these metates represent a highly distinctive group paralleled only by the slightly later 'flying-panel'

metates (MPM1.L3(FP)) from Western Veraguas in the Greater Chiriqui cultural zone which seem related in some measure to the ones from Central Costa Rica (see reference under 'Anthropomorphic Figures and Motifs' earlier in this chapter).

Surmounts at each end of the grinding plates of four-legged metates in Period VI Atlantic Watershed Costa Rica (MPM1.L4(SUR/OVL) are sometimes modelled in form of small bird-like motifs and, as suggested earlier, it could even be that what I have called 'crests' are a stylized representation of the plumage of a bird. If this interpretation was correct, the avian motif there could be seen as a continuation of a stylistic feature from much earlier times.

A curious example of stylized bird motifs occurs on a small group of tripod metates reportedly from the Greater Chiriqui and Central Panama cultural zones (MPM1.L3(PRO)). Protrusions carved into the underside of the grinding plates suggest avian motifs. Stylistically this group is unlike any other group of isthmian metates, except that, in overall appearance, there seems to be some similarity to the 'marimba' type metates of Period IV Central Costa Rica; the stylized head or 'nubbed' or 'notched' motifs around the grinding top rim are, however, missing in Panama. It is possible that these metates belonged to distantly related groups, one idolizing birds and the other reptilians (the 'marimba' pipe-like projections are thought to represent the scales of an alligator).

Except for the feline creatures which appear occasionally in the imagery of 'flying-panel' metates belonging to late Period IV Atlantic Watershed Costa Rica, feline figures and feline heads occur relatively rarely in the decoration of metates. This is perhaps puzzling when one sees the great number of feline effigy metates that were around both in Central Costa Rica and Greater Chiriqui during Period VI.

However, there is one particular group of pedestal metates in Central Costa Rica, in early Period VI around AD 1000, which is closely associated with felines: the circular metates supported on a hollowed-out flared pedestal with long vertical slits (MPM1.PE/FLS). The rims of these examples are invariably decorated with realistically carved feline heads or, in rare cases, with fully modelled miniature feline effigies hanging from the border of the rim. Stylistically these metates form a homogeneous unit, and it is thought that they were associated with societies belonging to the 'jaguar clan'. It is known that, as late as the 19th century, 'caciques' were chosen in the Talamancan region of Atlantic Watershed Costa Rica from either the 'jaguar' or 'monkey' clan (Snarskis, 1981b:213).

By implication, the metates with four legs in form of monkey figures (MPM1.L4/AS) could therefore have been associated with the 'monkey clan'. Stylistically this group of metates is totally uniform and could even represent the creation of a single manufacturer. It belongs to Period VI Atlantic Watershed Costa Rica. Another 'monkey clan' candidate exists with the circular ring-based atlantean supported metates (MPM1.ATL/RB(CIR), also belonging to Period VI. These and the monkey figures which appear in the panels of four-legged metates with surmounts (MPM1.L4(SUR/PAN) seem clearly related to each other. Other contemporary types include rectangular and oval animal-supported types (MPM1.AS), most frequently with felines as carriers.

In summary it could be said that jaguar and monkey symbolism appears to dominate the iconographic repertoire after AD 1000, whereas avian and reptilian motifs figure more prominently in earlier times.

4. Presence or Absence of other Decorative Elements

It was noted earlier that a relatively high presence of certain decorative elements on specific metate types generally implies a low frequency or even total absence of other embellishments, and it is therefore possible to associate - at least some design elements - with certain metate types.

For instance, it is most striking that geometric decorations carved in low or high-relief virtually do not occur on tripod multipurpose metates from Central Costa Rica and Greater Chiriqui during late Period IV and Period V. This includes the three-legged rectangular, oval and circular specimens as well as the 'flying-panel' and 'marimba' type metates and the two small groups MPM1.L3/EFF and MPM1.L3(PRO). Embellishments on these metates consist entirely of three-dimensionally modelled anthropomorphic and/or zoomorphic features.

In the cultural zone of Greater Nicoya, on the other hand, incised and excised geometric embellishments proliferate during the same period. In fact, it seems that patterns such as interlaced bands, meander and basketry patterns, also fret designs and the elaborate technique of 'filigree' carving, can be associated almost exclusively with SPM (special purpose) metates. Interlaced bands and basketry patterns are perhaps reminiscent of the woven-mat pattern on Classic Maya pottery, whereas the meander and fret motifs are more reminiscent of Central Mexican design elements. In both cases a certain affinity with Mesoamerica is indicated.The elaborate and intricate openwork carving in the decoration of the effigy and non-effigy SPM specimens from Greater Nicoya, however, appears to be a stylistic feature which is uniquely associated with Greater Nicoya.

The guilloche motif probably represents the only one of the more intricate design patterns which can be found through the centuries on both SPM and

MPM, effigy and non-effigy, types. If indeed the two or more twisted bands forming a braid were intended to represent intertwined serpents, this would mean that the serpent symbol was of a certain importance across the isthmian cultural borders.

The diamond pattern seems to belong almost exclusively to the effigy metates (MPM2.L4) of Period VI Central Costa Rica and Greater Chiriqui. Of the relatively complex design patterns this is the one which occurs most frequently, especially on heads, tails and legs of feline effigies, which suggests that this was the traditional way of depicting the jaguar skin. Similarly, the scale motif was used to characterize the tails of these effigy metates.

A number of motifs and figures occur infrequently, such as rings with rosettes or rings with stars, or frogs, or those features which are associated only with particular types of metates, such as composite human/bird figures with 'flying-panel' metates, or marimba pipes with a certain type of three-legged metates, or crests with a specific type of four-legged metates. The apparent rarity of such features could be an indicator of metates which were made by specialist artisans for specific groups and/or particular occasions. Themes of that nature are discussed in Appendix 1.

CHAPTER IV

REGIONAL TRADITIONS

GENERAL INFORMATION

The decorated metates represent a unique cultural trait belonging solely to Lower Central America. However, it has been shown in chapters II and III that, within the area, metates appear in many different forms and with a variety of decorative elements. This variety makes it possible to see them in patterns as they occurred over some 1500 years in different regions from eastern Honduras in the north to the Panama Canal in the south.

A definition of the cultural area of Lower Central America, as commonly accepted by archaeologists today, is given in chapter I:4. Five zones are recognized with distinct cultural traditions, i.e. Greater Nicoya, Central Highland and Atlantic Watershed Costa Rica, Greater Chiriqui, Central Panama and Eastern Panama.

For the purpose of my study I have added another zone, the Northern Zone. I have also renamed the zone of Central Highland and Atlantic Watershed Costa Rica 'Central Costa Rica' since it includes not only the Central Highland and Caribbean region, but also the area along the Pacific coast.

The Northern Zone has been added because it appears to have been a significant frontier region between Mesoamerica and Lower Central America. The cultural development in this area was continuously, although variably, influenced through time from both the cultural areas north and south, an aspect which receives confirmation in the decorated metates of the Northern Zone.

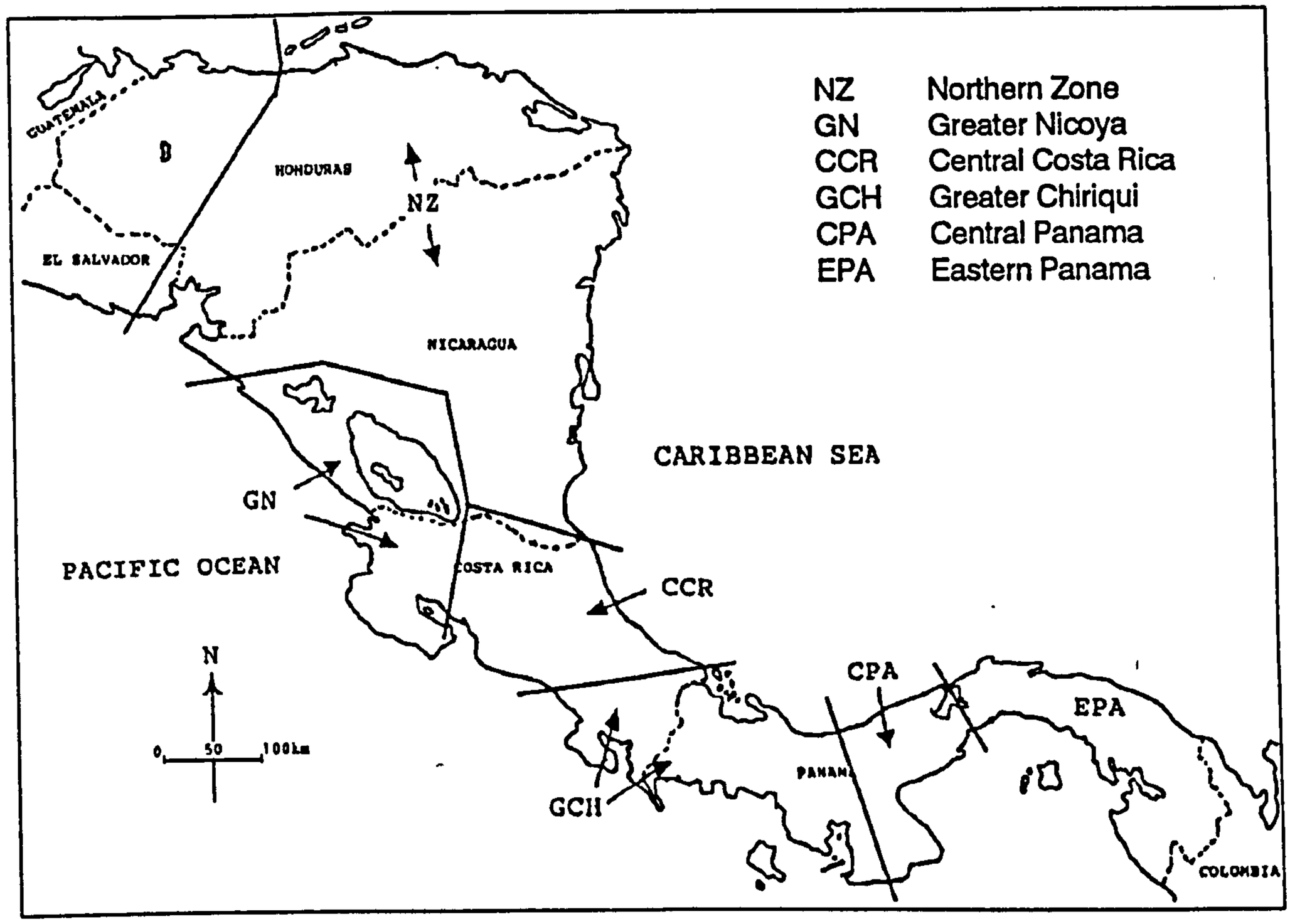


Fig. 20. Cultural zones of Lower Central America

..... Present political frontiers
——— Approximate boundaries of cultural zones

The six cultural zones as pertinent to this study can be defined as follows (fig. 20):

1. The Northern Zone (NZ) which comprises the southeastern corner of El Salvador, the eastern part of Honduras, including the Bay Islands in the Caribbean and the Gulf of Fonseca region on the Pacific, as well as northeastern Nicaragua;

2. Greater Nicoya (GN) which includes southwestern Nicaragua with the Isthmus of Rivas and the islands on Lake Nicaragua, and the northwestern part of Costa Rica with the Peninsula of Nicoya and the Province of Guanacaste;

3. Central Costa Rica (CCR) which comprises the region of the Atlantic Watershed and the Central Highlands of Costa Rica as well as the Pacific drainage as far as Quepos;

4. Greater Chiriqui (GCh) which includes in Costa Rica the Pacific coast south of Quepos with the Diquis region and Osa Peninsula, and also the upland valleys southwest of the Talamancan mountains; and in western Panama the Province of Chiriqui and Bocas del Toro as well as western Veraguas with the western part of the Azuero Peninsula;

5. Central Panama (CPA) which comprises eastern Veraguas with the eastern half of the Azuero Peninsula, the Province of Cocle and the Province of Colon west of the Canal;

6. Eastern Panama (EPA) which covers the area from the Canal zone eastward as far as the Colombian border.

No decorated metates have been reported from Eastern Panama and, therefore, this particular cultural zone will not be discussed here.

In Chapter II the distinction is made between two basic metate types: the SPM (special purpose metate) and MPM (multipurpose metate). Although this division is based on a functional differentiation, it is equally valid and representative as a fundamental variance within regional traditions. The rimless, rectangular grinding top of a 'special purpose' metate with a slight curve lengthwise is a typical Mesoamerican feature as is the liking for tortillas. Metates of this kind were used in Mesoamerica as far back as the 2nd millennium B.C.(Piña Chan, 1960:54). It is not surprising therefore that this metate type occurs in the northern part of the Lower Central American cultural area, but is completely absent further south in Central Costa Rica, Greater Chiriqui and Central Panama. It gets notably more 'Lower Central American' in appearance as one moves further away from the Northern Zone. For instance in Greater Nicoya, the cultural area adjacent to the Northern Zone, the decorated metates still have the typical 'Mesoamerican' grinding plate but, in all other aspects, the majority differ radically from the northern type.

The variance between three- and four-legged metates appears to be determined regionally too. SPM types are generally three-legged; four-legged metates are virtually absent north of the Central Costa Rican cultural zone. Further south, in the cultural zones of Central Costa Rica, Greater Chiriqui and Central Panama, MPM (multipurpose metate) types occur in a great variety, - with three or four legs, as well as pedestal- or figural-supported. However, it is worth noting that, chronologically, three-legged specimens occur earlier, in Periods IV and V, whereas four-legged and other examples belong generally to the later time.

The chronological and geographical framework in the following text is based on a relatively small amount of known data on decorated metates recovered from controlled excavations. Compared to neighbouring Mesoamerica and South America, Lower Central America has remained a neglected area archaeologically. Little systematic work was done before the 1950's, and scientific research became firmly established only in the 1970's. As yet only a fraction of the total area has been covered by controlled investigations. The most substantial amount of new information has come from Costa Rica. In the other areas large parts remain virtually unknown archaeologically, as e.g. the regions of eastern Honduras and eastern Nicaragua and also stretches of Panama.

For my information I have also benefitted from reports and diary notes of earlier professional and amateur archaeologists. In addition, I have classified the large amount of material in my corpus, which comes from museum and private collections and is largely without any detail of provenance, by comparison with material from published sources. I believe therefore that, combined with the material from known circumstances, my sample of decorated metates is reasonably and sufficiently comprehensive to provide the basis for defining 'Regional Traditions'.

METATE TRADITIONS IN LOWER CENTRAL AMERICA

The following pages represent a summarized synthesis of Chapters II and III with added data from published sources.

1. Northern Zone (fig. 21)

Decorated metates from the Northern Zone are exclusively of the SPM (special purpose metate) type. They are usually three-legged; the solitary four-legged specimen in my corpus (example 545) probably represents an anomaly. The majority consist of effigy metates, including avian and reptilian effigies.

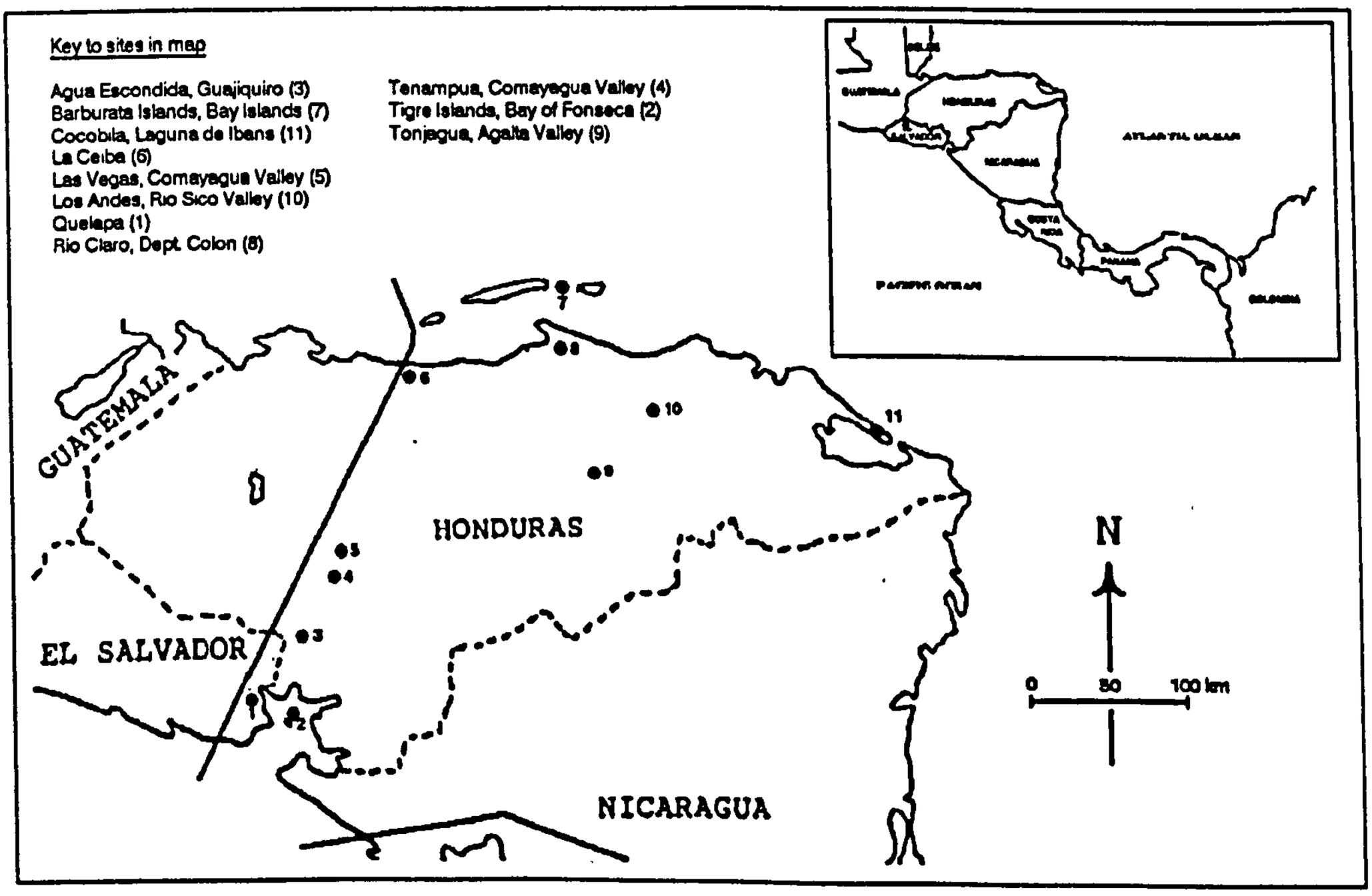


Fig. 21. Northern Zone with sites
- - - Present political frontiers
——— Approximate boundaries of cultural zones

The following metate groups are representative of the Northern Zone:

SPM1.L3/ANG (chapter II/A: 1c, p.43ff.)

SPM2.L3/ANG (chapter II/B: 1c, p.61ff.)

SPM2.L3/CON (chapter II/B: 1a, p.49ff.)

SPM2.L3/TRA/SOL (chapter II/B: 1b, p.58ff.)

So far no decorated metates are known from this zone prior to late Period V/early Period VI. The earliest specimens are reptilian effigy metates of the SPM2.L3/ANG(REP) variety. Such examples have been found in both cemeteries and house mounds at Las Vegas in the Comayagua Valley, central Honduras, in association with Ulua-Yojoa Polychrome pottery of the period AD 500-1000 (Stone, 1957:16). Similar metates are known from Tigre Island, Bay of Fonseca, southern Honduras (Stone, 1957:101) and from Quelapa in El Salvador (Longyear, 1944:140). Some examples of the effigy type are gigantic in size. Such specimens have been reported from Tonjagua, Valley of Agalta, northeastern Honduras (Stone, 1941:21) and fragments were also found in the Rio Claro region, Dept. of Colon, northeastern Honduras (Healy, 1978:15). Metates like these represent an interesting culture frontier phenomenon; in late Classic and Post-Classic southeastern Mesoamerica metates were often carved in the form of unusually high tripods but, although similar in form, they remained undecorated and without effigy heads, in contrast to those from the Northern Zone of Lower Central America.

The non-effigy metates of the SPM1.L3/ANG group are probably contemporary with the effigy metates of the SPM2.L3/ANG group; an example was excavated at Cocobila, Laguna de Ibans, northeastern Honduras, and is said to belong to Period VI (Clark et al., 1983:40).

Both the effigy and non-effigy specimens often have the rims decorated along the sides of the grinding plate with a meander band carved in low-relief.

Metates of the SPM2.L3/TRA/SOL group, on the other hand, remain unadorned apart from the modelled effigy head. Most likely, these metates belong also to late Period V/early Period VI. Such specimens, including an avian effigy, have been reported from Barburata Island, Bay Islands (Strong, 1935:86) and also from Los Andes, Rio Sico Valley, northeastern Honduras (Stone, 1941:39). The legs shaped in vaguely trapezoidal form resemble somewhat those of the SPM2.L3/TRA/OFR category from the Greater Nicoya cultural zone during Period V.

Metates belonging to the SPM2.L3/CON group are probably contemporary with those of the SPM2.L3/TRA/SOL group; an example is known from Agua Escondida, near Guajiquiro, southwestern Honduras (Stone, 1957: 111).

The traditional decorated metate of the Northern Zone can thus be defined as 'Mesoamerican' in functional terms, because of its rectangular, rimless grinding top which is slightly curved lengthwise; but, in its overall appearance, it is unmistakably marked by Lower Central American stylistic features.

2. Greater Nicoya (fig. 22)

Within the Lower Central American culture area the decorated metate of Greater Nicoya stands out uniquely for several reasons:

1) it is generally of the SPM type, i.e. for grinding corn in the method which is typical in Mesoamerica, but in all other aspects it is distinctly regional in style;

2) it was made in an overall distinctive Greater Nicoyan style during a span of some 800 years after which, toward the end of Period V, production seemed to stop abruptly;

3) a greater variety of intricate techniques were used together in its manufacture than anywhere else in the isthmian area;

4) among the effigy metates, a larger variety of tropical animals are represented than in any other isthmian culture zone.

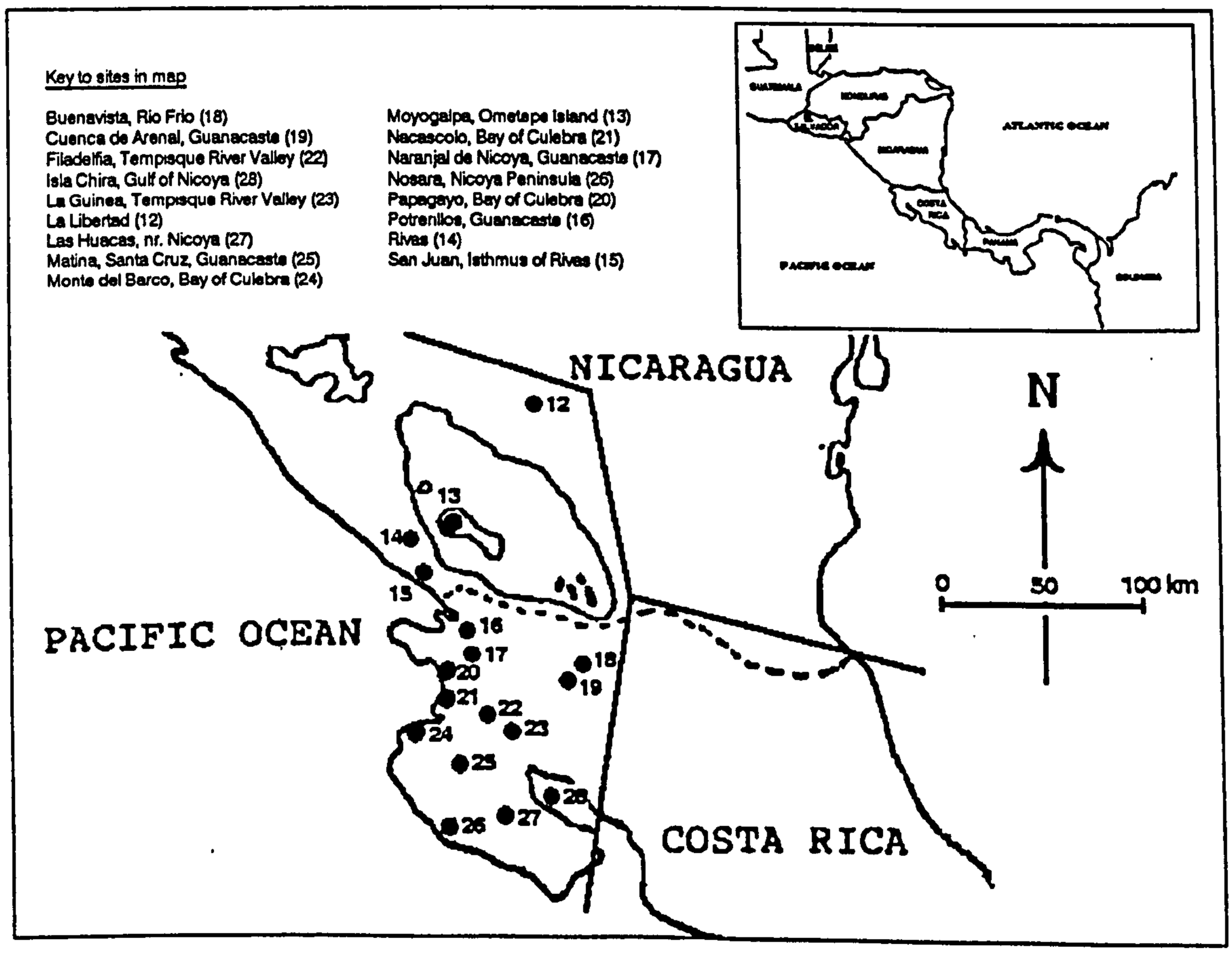


Fig. 22. Greater Nicoya cultural zone with sites
- - - Present political frontiers
——— Approximate boundaries of cultural zones

The following metate groups are representative of the Greater Nicoya cultural zone:

SPM1.L3/CON (chapter II/A: 1a, p.36ff.)

SPM1.L3/TRA (chapter II/A: 1b, p39ff.)

SPM2.L3/TRA/OFR (chapter II/B: 1b, p.51ff.)

SPM2.L3/TRA/SOL (chapter II/B: 1b, p.58ff.)

SPM2.L3/FSL (chapter II/B: 1d, p.63ff.)

SPM2.L4/TRA/OFR (chapter II/B: 2, p.66ff.)

and in addition:

MPM1.PE/BIC (chapter II/C: 3, p.96 and 99)

MPM2.PE/BIC (chapter II/D: 2, p.135)

Although the decorated specimens in Greater Nicoya include both effigy and non-effigy metates, and both with many different decorative features, they represent in all a relatively homogeneous unit through several centuries from late Period IV, c. AD 100, through to late Period V, c. AD 800-900. This is perhaps principally due to their formal/functional appearance: in general, they are tripods and have a rectangular, rimless grinding plate which is slightly curved lengthwise.

It is thought that the earliest decorated metates from Greater Nicoya are those of the SPM1.L3/CON(GEO) variety (M. Snarskis, personal communication), with three conical legs and grinding plates which have simple geometric patterns carved in low-relief at one or both ends of the platform above, and sometimes also below. A fragment of such a metate was excavated by Baudez (1967:181) from a tomb at La Guinea on the Middle Tempisque River, Guanacaste, associated with ceramics of the Ciruelas ceramic phase, AD 300-500. Other fragments have been reported from the Isthmus of Rivas, Nicaragua (Healy, 1980:276), associated with ceramics of

the San Roque phase, AD 300-500. A complete example was found in burial VIII at the famous cemetery site of Las Huacas, near Nicoya (fig. 23).

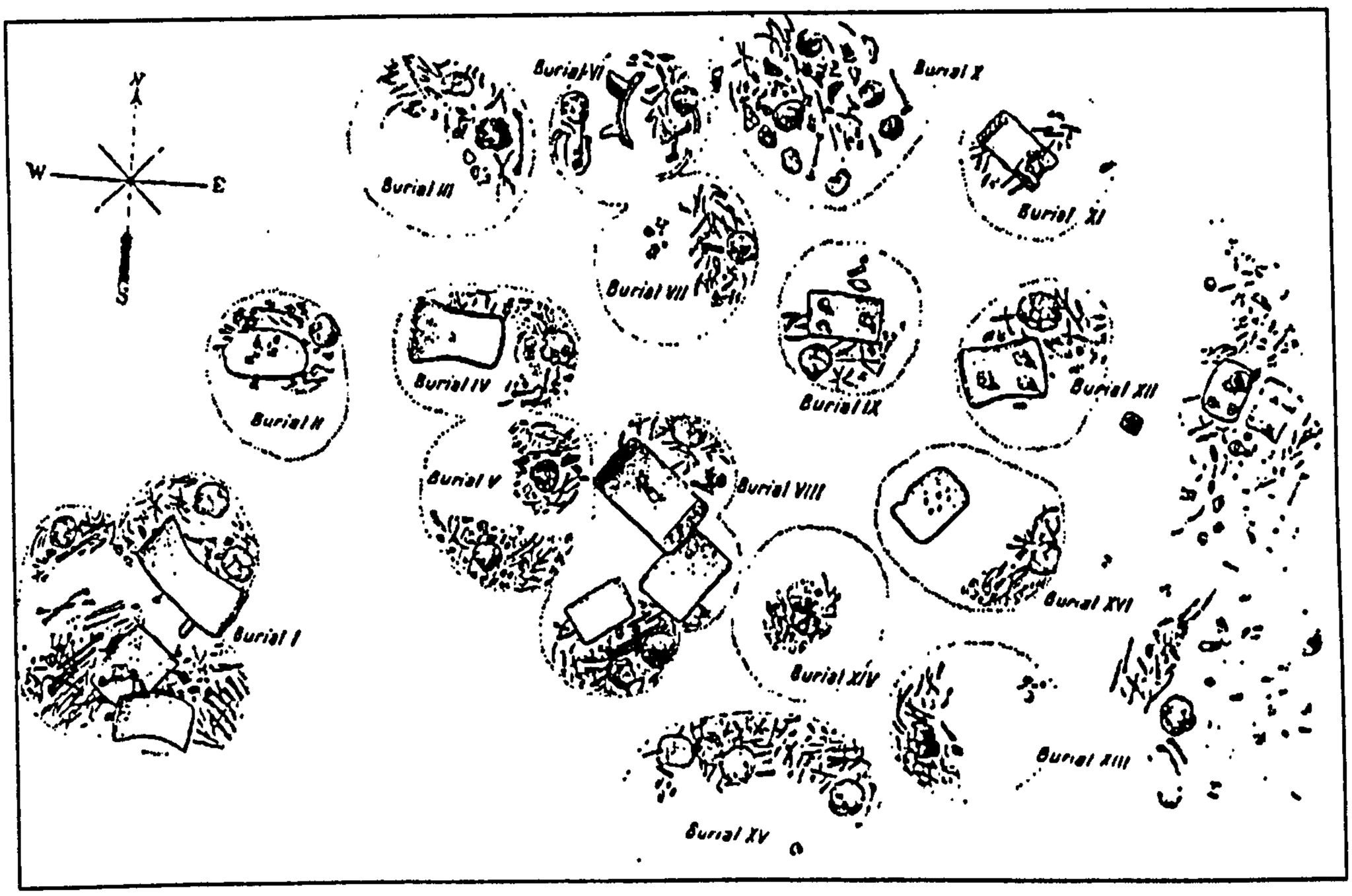


Fig. 23. Cemetery site of Las Huacas, Nicoya Peninsula (after Hartman, 1907:pl.XLVII)

Las Huacas provides not only a representative sample of early metate specimens, but also of 'luxury' artifacts including finely carved stone maceheads and effigy pendants of jade and other hard stone. The association of elaborately decorated metates with finely carved stone ornaments has led to the hypothesis that they represent 'prestige' artifacts which "may have formed part of a politico-religious complex associated with the control of agricultural lands and the processing and redistribution of foodstuffs" (Snarskis, 1984a:29).

Las Huacas was excavated by C.V.Hartman in 1903 (Hartman, 1907) and re-examined more recently by Baudez (1967,196 ff.) and Fonseca and Richardson (1978) who have dated the site to between AD 180-525. The principal use of the cemetery appears to have occurred within the Ciruelas

ceramic phase, AD 300-500, with which metates in burials I, IV and VIII are associated. Another metate found in burial VIII and one from burial I belong to the SPM1.L3/CON(EFF) variety, which seems to be a slightly later development from the SPM1.L3/CON(GEO) variety. The conical legs in both groups are often embellished with encircling grooves and/or other linear motifs, and the grinding plates generally display a geometric pattern at one or both ends. But the undersides of grinding plates belonging to the SPM1.L3/CON(EFF) variety differ radically. They are much more elaborately decorated, displaying complex stylizations of humans with animal trimmings, or monkeys, birds or reptilian creatures carved in low-relief; sometimes these are incorporated three-dimensionally into the metate itself, so that the front leg might represent a head and the back legs, arms or feet of a figure. Images such as these remain a unique stylistic feature in isthmian traditions; in other areas of Lower Central America zoomorphic and anthropomorphic figures and motifs appear mostly sculpted three-dimensionally, not incised.

The characteristic Greater Nicoyan metates which succeeded the SPM1.L3/CON group toward the end of Period IV and during Period V are the effigy and non-effigy specimens with three trapezoidally-shaped legs belonging to the SPM1.L3/TRA and SPM2.L3/TRA groups. The oddly shaped legs are a distinctive element on these metates. In general, these legs are elaborately carved in openwork fashion. In overall form they are sometimes reminiscent of birdheads with long beaks or, alternatively of stylized inverted anthropomorphic or simian figures. Some are thought to be representations of human figures upside-down with an alter-ego creature on their back, in form of an animal protector figure (Pfeiffer, 1991). The theme of humans paired with alter-ego figures is also known from monumental stone statues (Arellano, 1979; Zelaya-Hidalgo et al.1974) and small carved jade objects (Snarskis, 1981b:182;pl.81) from the Greater Nicoya cultural

region. The leg style of these metates is certainly highly individual and occurs solely in the Greater Nicoyan cultural zone.

Non-effigy metates with three trapezoidally-shaped legs occur either with two knobs, SPM1.L3/TRA(K), or with appendages like handles, SPM1.L3/TRA(H), protruding from the front end of the grinding plate; specimens without either 'knobs' or 'handles', SPM1.L3/TRA, are rare. The 'knobs' are usually solid, sometimes carved in form of miniature zoomorphic heads. The 'handles' are vaguely reminiscent of birdheads, but could have served as a functional element.

The two metate varieties appear to have been contemporary. Examples of both groups are known to have come from one and the same place, e.g. from near to La Libertad in the Chontales region, Nicaragua, where "... tombs are in thousands, offering every possible variety of form, size and thickness." (Boyle, 1868:196). However, many more examples are known with 'handles' than with 'knobs'. Burial XI at Las Huacas (Hartman, 1907:22) produced a single SPM1.L3/TRA(H) specimen, and two similar metates were excavated in 1980 from tombs at the Nacascolo site, Bay of Culebra, Costa Rica, by a MNCR team (Snarskis, 1981b:190) and associated with ceramics of the period AD 300-600. An example with 'knobs' came from the area near Monte del Barco, Bay of Culebra (Accola and Ryder, 1980:75) and is thought to belong to the period from AD 500-1000. Baudez (1967:181) reports metate fragments from La Guinea, Middle Tempisque River Valley, Guanacaste, associated with ceramics of the San Bosco and Palo Blanco ceramic phases, AD 500-1000. A metate without 'handles' or 'knobs' as well as several metate fragments are reported from Cuenca de Arenal, Guanacaste (Chenault, 1984:174 ff.), associated with Silencio phase ceramics, AD 600-1000.

From the information available to date it appears that the tripod SPM type with trapezoidally-shaped legs continued in Greater Nicoya through several centuries. Oddly enough, many more effigy metates are known than

non-effigy ones. The reason for this could be simply that they were more attractive to early collectors because of their rather spectacular appearance. The open fretwork on legs and often also on effigy heads represents superb filigree work. In addition, exquisite carving in low- or high-relief technique appears on rims and other exposed areas of the metates, whereas the effigy heads of birds, jaguars, coyotes and alligators bear witness of outstanding sculpturing skills. So far no complete specimens have been recovered from controlled excavations, but it is thought that the effigy type was roughly contemporary with the non-effigy type, c. AD 300-700. It represents undoubtedly an 'artistic' climax in the development of metate production in Greater Nicoya.

The rare four-legged examples that occur among the SPM types are probably anomalies. So far I have come across six such metates only, five effigy types, SPM2.L4/TRA/OFR and one non-effigy type, SPM1.L3/TRA(H). They all have trapezoidally-shaped legs, carved in open fretwork fashion but, unlike the tripods, they have panels with effigies in openwork between the legs, a feature which appears characteristically later, in Period VI, in the Central Costa Rican cultural zone. However, one of the examples is reportedly from Tenampua, Central Honduras (Popenoe, 1936:568) and another from San Juan, Guanacaste (Lehmann, 1909). Since none are from controlled excavations and their date is uncertain, this group remains an 'outsider'.

Metates of the SPM2.L3/TRA/SOL and the SPM2.L3/FSL groups, which are thought to belong to Period V, are less elaborately finished, but seem somehow related to the earlier SPM2.L3/TRA groups. They are also tripods with rectangular, rimless and slightly curved grinding plates. The SPM2.L3/TRA/SOL metates have solid legs, however, and display little or no embellishment apart from the effigy head. In many ways they are closer to traditions associated with the Northern Zone, i.e. the specimens with

trapezoidally-shaped solid legs reported from northeastern Honduras and also from the Bay Islands.

In contrast, the metates of the SPM2.L3/FSL group, which have strangely shaped legs carved in openwork fashion in form of a tropical fruitslice (such as a watermelon), appear more typically Greater Nicoyan in style. The effigies represented are coyotes, SPM2.L3/FSL(CAN), jaguars, SPM2.L3/FSL(FEL), and alligators, SPM2.L3/FSL(REP) and the metates are all of an impressive size. What sets them apart from the characteristic Greater Nicoyan metate is that they display generally no incised embellishments on grinding plates or heads.

In summary it can be said that the tradition of decorated metates in Greater Nicoya followed a single line of stylistic development starting in late Period IV with a relatively plain non-effigy type (SPM1.L3/CON(GEO)), which soon became more sophisticated in appearance (SPM1.L3/CON(EFF)) and then developed into the spectacularly carved effigy and non-effigy metate types (SPM1.L3/TRA/OFR and SPM2.L3/TRA/OFR), continuing through Period V, during which time other types with a much simpler finish (SPM2.L3/TRA/SOL and SPM2.L3/FSL) appeared as well. This development represents an unbroken sequence from the early centuries AD through to the 9th century. At that moment, the production of decorated metates appeared to stop abruptly. No decorated specimens are known from Period VI. Archaeologists have recognized a marked shift of population concentration toward the coast in Greater Nicoya after AD 800, and it is thought "that volcanic activity may have driven people from the central piedmont toward the Pacific" (Snarskis, 1981:33). This could have meant that "the utilization of marine resources became increasingly important" (Snarskis, 1981a:36), while the need for metates decreased.

A small group of objects which I have included in my corpus as metates should be mentioned here. This concerns the solid hourglass-shaped effigy

and non-effigy objects, MPM1.PE/BIC and MPM2.PE/BIC, of which the slightly concave top could have served as a grinding bowl. The effigy types all have reptilian features added three-dimensionally, whereas the non-effigy specimens are just solid biconical pedestals. Baudez found 11 effigy examples, standing in line next to each other on one side of a plaza between circular house structures at the coastal site of Papagayo, Bay of Culebra (Baudez, personal communication). He believes that they were not metates, but that they were probably intended as potstands and perhaps even used as seats. However, I found distinct grinding marks on four specimens from museum collections which indicate that they were used for the processing of certain substances. They are clearly too small for grinding maize, but could have been used for pounding medecines or hallucinogens (see Appendix 1: 'Metates in Ritual Context') or pigments. It is, of course, possible that they served more than one purpose. Stylistically they are unlike any other Greater Nicoyan metate types; perhaps they represented a 'private' status symbol or emblem of a specific group. Chronologically they belong to Period VI (Baudez, personal communication).

3. Central Costa Rica (fig. 24)

All the decorated metates in this cultural zone are of the MPM (multipurpose) type and, in further contrast to Greater Nicoya traditions, there is no single consistent line of development recognizable in Central Costa Rica. Instead, a variety of decorated metates were manufactured over a time of some 1500 years from late Period IV to the end of Period VI,

indicating a development which was marked by a diverse and changing pattern in cultural traditions. The characteristic groups include:

MPM1.L3 (chapter II/C: 1a, p.72ff.)

MPM1.L3(MAR) (chapter II/C: 1b, p.75ff.)

MPM1.L3(FP+) (chapter II/C: 1d, p.80ff.)

MPM1.L3/EFF (chapter II/C: 1f, p.84ff.)

MPM1.L4 (chapter II/C: 2a, p.87ff.)

MPM1.L4/HS (chapter II/C: 2b, p.91ff.)

MPM1.L4/AS (chapter II/C: 2c, p.94ff.)

MPM1.PE/FLS (chapter II/C: 3, p.96ff.)

MPM1.PE/FLL (chapter II/C: 3, p.96ff.)

MPM1.PE/DRU (chapter II/C: 3, p.96,100)

MPM1.FS (chapter II/C: 4, p.101ff.)

MPM1.FS/RB (chapter II/C: 4, p.103)

MPM1.ATL (chapter II/C: 5, p.104ff.)

MPM1.ATL/RB (chapter II/C: 5, p.104,106)

MPM2.L4 (chapter II/D: 1, p.110ff.)

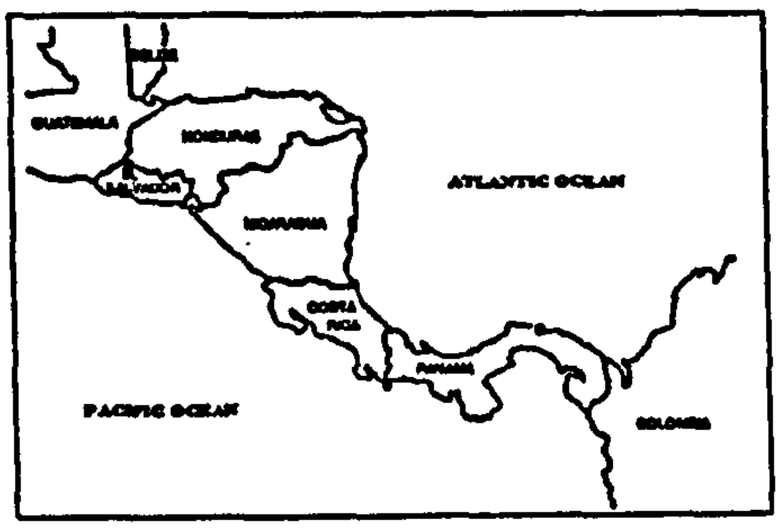
MPM2.FS (chapter II/D: 3, p.136ff.)

MPM2.AS (chapter II/D: 4, p.138ff.)

As in the Greater Nicoyan cultural region, the earliest evidence of decorated metates here falls into late Period IV, between AD 1-500. Early examples include metates of the MPM1.L3 group, with three conical or cylindrical legs and rimmed or concave grinding plates (usually sub-rectangular or circular in form), and also some with rimless rectangular grinding tops. The borders of the grinding plates are nearly always carved with nubs or stylized miniature heads. Metates of the MPM1.L3 group have been recovered from both domestic and funerary contexts in El Bosque sites in Atlantic Watershed Costa Rica and in Pavas sites in Central Highland Costa Rica. Complete examples are known from Severo Ledesma, Jimenez River Valley (Snarskis, personal communication) and Tibas, near San Jose (Snarskis, 1979:89).

Key to sites in map

Aguacaliente, nr. Cartago (47)
Azul de Turrialba (45)
Cartago (46)
Cerro de Puriscal, Prov. San Jose (49)
Guacimo, Linea Vieja (34)
Guayabo de Turrialba (38)
La Colombiana, Linea Vieja (36)
La Fabrica de Grecia (32)
La Union de Cartago (43)
La Union de Guapiles (33)
Las Mercedes, Linea Vieja (35)
Las Pavas, nr. San Jose (40)
Retes, Cartago (42)
San Isidro de Arenilla, Prov. San Jose (48)
San Isidro de Heredia, nr. San Jose (39)
San Ramon, Prov. Alajuela (31)
Severo Ledesma, Jimenez River Valley (30)
Tibas, nr. San Jose (41)
Tierra Blanca, Cartago (44)
Tortuguero, Pococi, Limon (29)
Williamsburg, Linea Vieja (37)



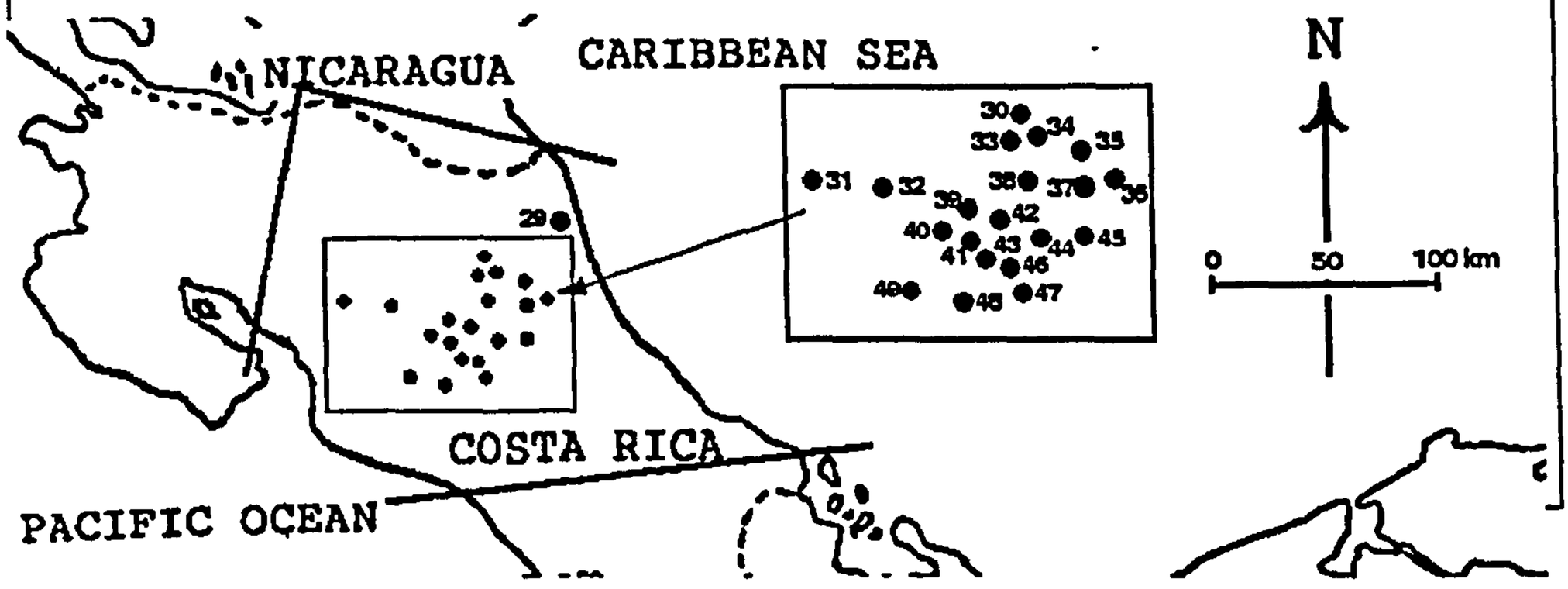


Fig. 24. Central Costa Rica cultural zone with sites
--- Present political frontiers
—— Approximate boundaries of cultural zones

The oval-shaped concave tripods and the rimmed rectangular ones are probably slightly later in date but, together with the sub-rectangular and circular specimens, they continue the tradition of MPM1.L3 types through Period V. Oval- and circular-shaped metates of the MPM1.L3 group were excavated at the Central Highland site of La Fabrica de Grecia, associated with Curridabat phase ceramics of the period AD 400-900 (Snarskis, personal communication).

The MPM1.L3(NRI) variety, with rimless, rectangular and almost flat tops and borders carved with nubs or tiny stylized heads, appears to be the prototype of the so-called 'marimba' style metates, MPM1.L3(MAR), and of the spectacularly carved 'flying-panel' metates, MPM1.L3(FP+) Although

each of the three varieties has its own individual style, they represent together a tradition which is characteristic of Central Costa Rica in late Period IV and which features tripods with conically- or cylindrically- shaped legs and a 'nubbed', 'notched' or 'stylized head' decoration indicating a common concern with trophy or sacrificial heads.

Neither 'marimba' type metates nor MPM1.L3(NRI) specimens have so far been found in controlled excavations, but a fragment of a 'flying-panel' metate was recovered from a cache or burial beneath a house floor at the Severo Ledesma site, associated with gravegoods with three C14 dates between 50 BC and AD 350 (Snarskis, 1984b:33). Other 'flying-panel' metates, many with a fantastic display of imagery, have reportedly come from various sites in Atlantic Watershed and Highland Costa Rica. Similar to elaborately carved Greater Nicoya metates of late Period IV and early Period V, they have been associated with 'luxury' artifacts such as maceheads of hardstone and effigy pendants of jade and other stone. However, although the association of such ornaments with metates might indicate some sort of a link between the two cultural regions, it must be noted that the totally different metate styles in the two cultural regions bear witness of non-identical traditions.

Although the chronology is unclear for tripod metates with anthropomorphic or zoomorphic effigies carved three-dimensionally into the legs, MPM1.L3/EFF, they seem related to the other MPM1.L3 varieties mentioned above; they all have notched rims, and the effigies on the legs have parallels on the 'flying-panel' metates. An example with human heads carved into the legs is known from the Porvenir site, Williamsburg, Atlantic Watershed Costa Rica (Stirling, 1969), but without a date.

Production of 'flying-panel' and other elaborately carved metates appears to have come to an end soon after AD 500 and, although the tradition of tripods with 'nubbed' or 'notched' grinding tops continued in Central Costa Rica

through Period V, there seems to be a hiatus during that time in the manufacture of very ornate metates. But then, toward the end of the first millennium AD, a radical change in metate manufacturing traditions can be noticed. Decorated three-legged non-effigy metates disappeared completely and their place was taken by four-legged effigy and non-effigy metates as well as pedestal-, figural- and atlantean-supported metates. Many different varieties occurred and continued throughout Period VI, AD 1000-1550.

The earliest four-legged metates appeared in Central Costa Rica sometime around the 9th century AD and include those of the MPM1.L4/HS group. They have oval concave grinding tops, usually decorated with small human heads carved around the border and supported by four human figures. Examples are known from Sabanilla Azul and La Lima de Cartago, Central Highland Costa Rica (Lehmann, 1909) and from the surroundings of Cartago (Spranz, 1957:149). The 'human head' element relates this group on one hand to the earlier three-legged metates from Atlantic Watershed and Highland Costa Rica, but on the other, formally and iconographically, to the giant oval MPM1.L4/HS specimens known from Barriles in the adjacent Greater Chiriqui cultural zone, although these are of a much earlier date. The imagery on the Costa Rican MPM1.L4/HS variety is no longer concerned with zoomorphic elements, as on the earlier 'flying-panel' metates, but concentrates solely on anthropomorphic features. These metates seem therefore closer to the Greater Chiriquian tradition than to that of their own region.

Metates with four standard cylindrical legs, MPM1.L4, occur with or without surmounts at each end of the oval grinding top and some display, in addition, panels between the legs with simian creatures carved in openwork fashion. Those specimens which have defined heads carved around the rim resemble the MPM.L4/HS variety from late Period V Central Highland Costa Rica and are likely to be contemporary with them, i.e. they are probably earlier in

date than specimens with other ornaments. The rims of such specimens have usually a band of neatly carved pellets and nubs and, in addition, most of them have surmounts at each end of the grinding plate like emblems or crests (see chapter III, p.159,160). The 'pellets and nubs' band is also a feature on rims of metates supported by four monkey figures of the MPM1.L4/AS group. Examples of both these varieties (MPM1.L4/AS and MPM1.L4/HS) are known from only one site in Period VI, i.e. from Las Mercedes, Atlantic Watershed Costa Rica (Mason, 1945: pls. 24 & 25). This fact suggests that the 'pellets and nubs' band on metates, together with crest-like surmounts, was perhaps an attribute of a particular group or clan.

Simian figures are a rare occurrence in earlier periods, appearing only sporadically in the iconography of 'flying-panel' metates but, during Period VI, monkeys became a prominent feature. As mentioned before, they appear carved in openwork fashion in panels linking the legs of four-legged metates and as supports of metate tops in the MPM1.L4/AS variety. The atlantean-style figures of ring-based metates, MPM1.ATL/RB, are in most cases represented by monkey figures too. It is thought that these varieties may have been associated with monkey clans (see chapter III, p.172).

New forms which began to appear toward the end of Period V also include pedestal-supported metates. Some of the elegantly shaped circular metates, MPM1.PE which are supported on hollowed-out flared pedestals carved in lattice-work pattern, MPM1.PE/FLL, or with long vertical slits, MPM1.PE/FLS, are thought to belong to the time around AD 1000. No such examples have been found in scientifically controlled excavations, but a remarkable discovery of a cache of wooden objects near Retes, Cartago, included a specimen carved in wood similar in shape, for which a C14 date of AD 960 has been obtained (Aguilar, 1953:42; Stone, 1977:210).

A number of superbly finished pedestal-based metates were excavated around the turn of this century in Atlantic Watershed Costa Rica at Guayabo

de Turrialba (Snarskis, 1981b:213) and at Las Mercedes (Mason, 1945:pl. 27c) and also in the Central Highlands at Tierra Blanca (Spranz, 1957:149 ; von Schroeter, 1895). The feline motif, now replacing the human head element, is a prominent feature on most of these metates. The rims of the circular tops often display finely carved feline heads or free-hanging feline motifs, and it has been suggested that such elaborately worked specimens could have been the property of 'caciques' of the jaguar clan (see chapter III, p.172). Similar metates, although generally smaller in size and less elaborately finished, are known from Period VI sites both in Central Costa Rica and the adjacent cultural region of Greater Chiriqui. The drum-shaped pedestal metates, MPM1.PE/DRU, belong to this tradition as well.

The first Central Costa Rican effigy metates, MPM2.L4, began to be produced after AD 1000, and feline effigy metates, MPM2.L4(FEL), became a particular feature of Period VI. Nearly 80% of my samples are feline effigy metates, a few are reptilian, MPM2.L4(REP), some cannot be identified, MPM2.L4(ZOO), and only three examples are anthropomorphic, MPM2.L4(ANT). The latter are without details of provenance, but stylistic similarities in facial characteristics with Period VI statuary, and in formal/functional aspects of the grinding plate with other effigy metates, indicate that these specimens belong to Central Costa Rican traditions.

An important technological change can be observed after AD 1000: the introduction of incised decorative carving in low- and high-relief technique. During the first millennium AD, decorations on metates were almost exclusively modelled in three-dimensional form - including the complex openwork carving on 'flying-panel' metates - and, in contrast to Greater Nicoya, where carving in low- and high relief was in use several centuries earlier, during late Period IV/early Period V, embellishments worked in this technique became a traditional feature in Central Costa Rica only during Period VI.

Although metates occurred in a variety of forms and sizes during Period VI, they somehow seem to belong to one big family. The majority of effigy metates have heads, legs and tails (if any) carved in a naturalistic style, and often all three, as well as the border of the grinding top, are decorated with geometric patterns or motifs carved in low-relief. At the site of Las Mercedes in the Santa Clara Valley of Atlantic Watershed Costa Rica, hundreds of different metates, though similar in style, were found. They include four-legged effigy and non-effigy metates, MPM1.L4, and MPM2.L4, effigy and non-effigy figural-supported metates, including ring-based ones, MPM1.FS, MPM1.FS/RB, and MPM2.FS, also animal-supported effigy metates, MPM2.AS and atlantean- supported metates, MPM1.ATL, including the ring-based variety, MPM1.ATL/RB. Las Mercedes was first recognized as an important archaeological site in the late 19th century by Minor Keith and later by C.V.Hartman (1901). Minor Keith, who was involved with the building of the 'Linea Vieja' railway, excavated and collected some 16'000 different artifacts and brought them to the USA. Sadly, he had not recorded any excavation details but, many years later, the stonework was meticulously catalogued by J.Alden Mason (1945).

Hartman's studies at Las Mercedes and also at several sites in the Cartago Valley, in Central Highland Costa Rica, were more scrupulous. In comparing his detailed descriptions of metates with recent investigations made at the Period VI site of Aguacaliente in the Cartago Valley, they can be associated, by implication, with the La Cabana and Cartago ceramic phases, AD 1000-1550 (M. Snarskis, personal communication).

With the exception of animal- and figural-supported effigy and non-effigy metates, all the other varieties present in Period VI sites in Atlantic Watershed and Central Highland Costa Rica occurred during the same time also in the adjacent cultural zone of Greater Chiriqui. This suggests that the late traditions were shared by relatively widespread populations.

Central Costa Rican metate traditions can thus be seen in two distinctive but separate patterns:

1) An early development, during the first millennium AD, characterized by three-legged non-effigy metates in different sizes and forms, with a period during the early centuries AD when there was a particular blossoming of virtuoso sculptural skills in an entirely local style. The 'head' theme in the decoration of metates features prominently during that time, late Period IV/early Period V.

2) A complete change toward the end of Period V and during Period VI. A variety of different metates appeared, - pedestal-based as well as animal- and figural-supported specimens. Four-legged metates became the norm, both effigy and non-effigy, and these styles were no longer regionally confined but were shared with adjacent Greater Chiriqui. Moreover, technical changes can be observed during that time.

The change in metate traditions during Period V reflects changes in general in Central Costa Rican life styles. In architecture rectangular and quadrangular houses were replaced by circular structures, ceramic manufacturers changed from bichrome painting to different kinds of modelled and appliqué decorations (Snarskis, 1982:84ff.), and jade carving disappeared altogether and was eventually superseded by metallurgy (Snarskis, 1984b:37).

4. Greater Chiriqui (fig. 25)

Culturally, the southwestern part of Costa Rica, which includes the Diquis region and Osa Peninsula, belongs to the Greater Chirqui cultural zone. Archaeologically, this is still a little known area and, to my knowledge, no decorated metates have been reported so far from controlled excavations in that part of Greater Chiriqui. However, from the Panamanian side, the following groups are known and can be listed as characteristic traditions:

MPM1.L3(FP) (chapter II/C: 1c, p.78ff.)
MPM1.L3(PRO) (chapter II/C: 1e, p.83ff.)
MPM1.L4 (chapter II/C: 2a, p.87ff.)
MPM1.L4/HS (chapter II/C: 2b, p.91ff.)
MPM1.PE/FLS (chapter II/C: 3, p.96ff.)
MPM1.ATL/RB (chapter II/C: 5, p.104,106)
MPM2.L4 (chapter II/D: 1, p.110ff.)

A certain affinity between early decorated metates of the Greater Chiriqui and the Central Costa Rica cultural zones can be noticed. The three-legged specimens with almost flat sub-rectangular or oval platforms, with protrusions carved into the underside, MPM1.L3(PRO), are somewhat reminiscent of the 'marimba' type metates from Atlantic Costa Rica. Instead of elements like resonators of a marimba which some archaeologists see, completely differently, as the scales of an alligator or cayman (Snarskis, 1978:157), the projections carved three-dimensionally into the underside of platforms on the Greater Chiriquian specimens, are of bird motifs. Examples of such metates have been reported from Las Palmas, western Veraguas (Lothrop, 1950:30) and Pueblo Nuevo, southeastern Chiriqui (Feriz, 1959). A similar example has also been reported from Sixto Pinilla Place, near Parita (Ladd, 1964:201), which is, strictly speaking, across the border in the adjacent cultural zone of Central Panama. This example is said to be later than AD 500, whereas the

specimens from Greater Chiriqui would be earlier if, indeed, they are related and therefore perhaps contemporary with the Central Costa Rican MPM1.L3(MAR) variety.

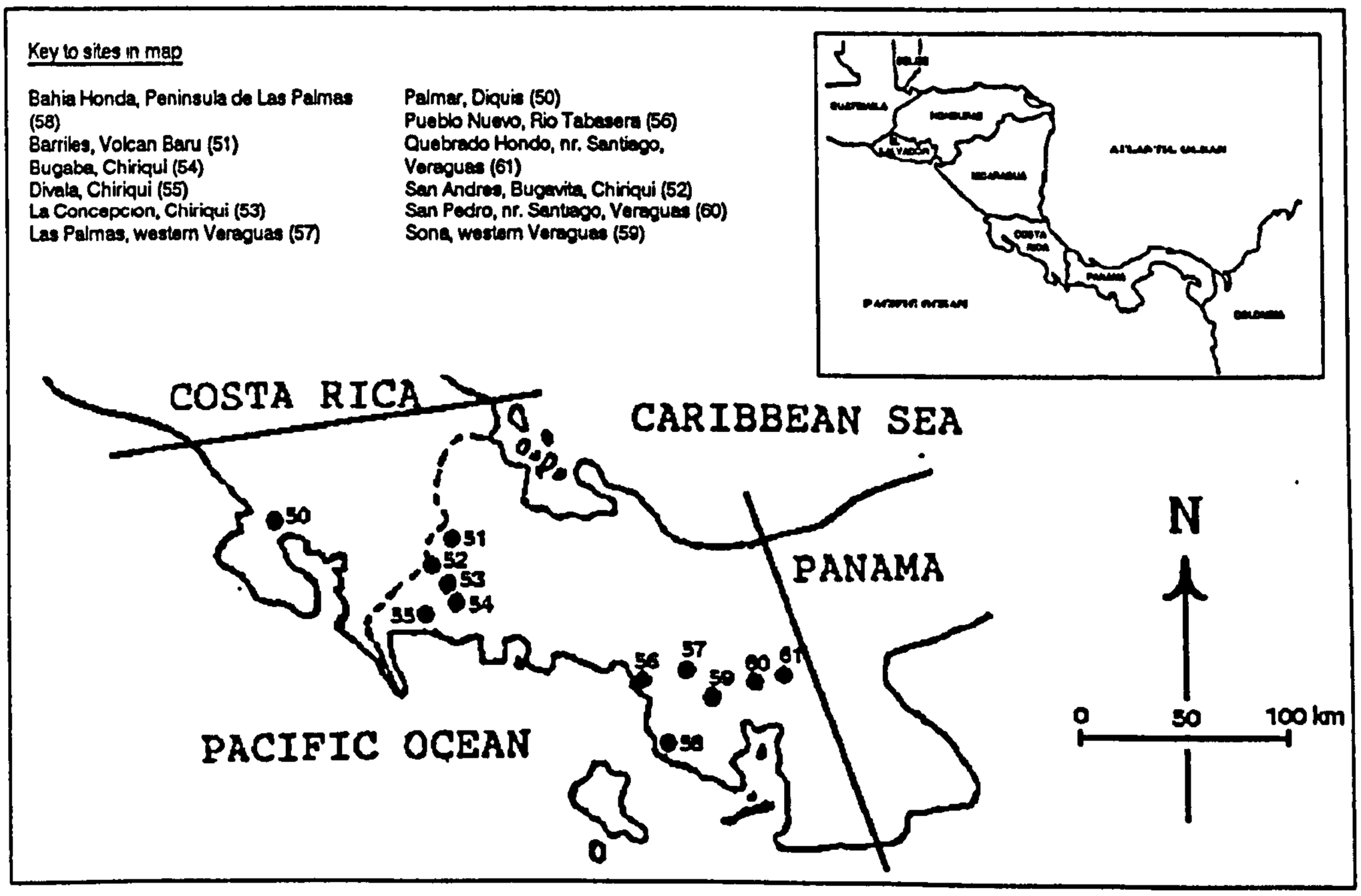


Fig. 25. Greater Chiriqui cultural zone with sites
- - - Present political frontiers
——— Approximate boundaries of cultural zones

Lothrop (1966:198) lists the three-legged 'flying-panel' metates from the Greater Chiriquian cultural zone, MPM1.L3(FP), as 'early' types. Such examples have been reported from Las Palmas and Sona in western Veraguas (Lothrop, 1950:30), and a number are said to have come from southern Veraguas and the western part of Azuero Peninsula, but none in dated context. All the known examples have sizable flat grinding tops with slight rims which are generally lined with nubs around the edge, and a flying-panel hanging from the underside and joined to the front leg. The 'flying-panel' concept together with the 'nubbed' theme associated with tripod metates is only, otherwise, known from late Period IV Central Costa Rica, the MPM1.L3(FP+) variety. Although the imagery displayed inside the

panels of the Greater Chiriquian metates is far less complex compared to that of the Central Costa Rican variety, the two have definite stylistic affinities and suggest some kind of a link between the two areas. It is curious, however, that in other aspects of material culture, such as pottery, lapidary arts or metalwork, there seems to be no such parallel between the two regions.

The earliest four-legged decorated metates known altogether in Lower Central America are probably the giant oval specimens which were found in shaft tombs at the site of Barriles in the Volcan Baru region of Chiriqui (Linares et al., 1975:141), associated with Aguas Buenas ceramics, c. AD 400-600. These are metates with well-defined heads carved around the border and with legs in the shape of large human heads or human beings with arms upraised, seemingly carrying trophy heads, MPM1.L4/HS. Often the plates have surmounts at each end in the form of a head. Similar metates are also known with plain legs, MPM1.L4. A four-legged metate with finely carved human heads around the border, but with a lizard motif on the legs, was recovered from tomb 5 at San Pedro, between Santiago and Sona, Veraguas (Brizuela, 1972:119).

Monumental statues of persons wearing conical hats, holding staffs and being carried on the shoulders by others (Linares, 1980:243), and large stone drums (i.e. 'barriles') with low-relief carvings, which include personages holding axes above their heads, were also found at Barriles. Linares (Linares et al., 1975:141) says, "Barriles sculpture associates symbols of rank and warlike attributes with maize agriculture" (i.e. metates), apparently a common association among many tropical New World societies where fermented maize was made into an important ritual drink (ibid.). Graham (1981:123) believes, on the other hand, that "the Barriles metates may have been sacrificial platforms used to prepare the bodies of war captives for ritual consumption", and that "the 'barriles' were monumental manos".

The Barriles site was abandoned sometime after AD 800, possibly due to a volcanic eruption. This might explain why metates of the MPM.L4/HS variety appear in the surroundings of Cartago in adjacent Central Highland Costa Rica during the 9th century.

Chronologically there seems to be a gap in the Greater Chiriqui metate sequence after AD 800, perhaps due to a natural disaster mentioned earlier.

After AD 1000 metate traditions in the Greater Chiriqui cultural region reflect those in Central Costa Rica. Most of the Period VI varieties known from there appear also in Greater Chiriqui, and it is often difficult, or even impossible, to determine from which of the two cultural zones unscientifically collected metates originated.

McCurdy (1911:26ff.) mentions four-legged effigy and non-effigy metates, MPM1.L4 and MPM2.L4, also pedestal-based specimens, MPM1.PE and ring-based atlantean-supported metates, MPM.ATL/RB. Although he provides a good survey, his descriptions were based solely on museum collections, not on material from known circumstances.

A pedestal-based metate, MPM1.PE(FLS), is known to have come from Bugaba, Chiriqui (von Schroeter (1895), and jaguar effigy metates MPM2.L4(FEL) have been reported from Palmar, Chiriqui (Mason, 1945:285) and from Las Palmas, western Veraguas (Lothrop, 1950:28). Lothrop remarks (1963,40) "that the large oval ones (jaguar effigy metates) are apt to come from Veraguas and that small rectangular examples with raised rims are typical of the Diquis Delta". A jaguar effigy metate, excavated at the cemetery site of San Miguel de Juco, Chiriqui (Haberland, 1976:115), is now thought by Haberland (1984,250) to represent an import. He believes that "they were most probably carved in Costa Rica and imported into Greater Chiriqui where they are rarer than publications indicate" (ibid.) In my opinion it is unlikely that heavy stone metates were

transported over long distances. On the other hand it is not improbable that people from Central Costa Rica came to adjacent regions and carved metates in their own style.

In considering the development of Greater Chiriquian metate styles it seems that traditions might have been shared through time, albeit in a fluctuating measure, by both the Greater Chiriqui and Central Costa Rica cultural regions. During the early part of the first millennium, the 'flying-panel' metates of both areas show a certain affinity, with the Central Costa Rican variety probably being slightly earlier in date. Insufficient knowledge of dating makes it difficult to be more precise. We know for sure, however, that four-legged decorated metates occurred earlier in Greater Chiriqui than in Central Costa Rica, and that the giant oval metates on human supports, MPM1.L4/HS, with well-defined heads carved around the border of the grinding plate, originated in Greater Chiriqui, and that this tradition reached Central Costa Rica only around the 9th century AD.

After AD 1000, metate traditions became almost indistinguishable which leads to the assumption that relationships between the two cultural zones must have been close during the late Period.

5. Central Panama (fig.26)

As one gets closer to the southern frontier of the Lower Central American cultural region, the presence of decorated metates dwindles. From the area east of the Panama Canal, no decorated metates at all have been reported to my knowledge. West of the Canal, in the cultural zone of Central Panama,

the sample known is distinctly meagre compared to that recorded from the other isthmian culture regions. The reason for this paucity may be partly due to the fact that only some areas have been covered by controlled archaeological investigations. On the other hand, it is probably correct to assume that there would be a gradual falling off in numbers of a feature as one gets further away from the 'central hearth' of its production which, in the case of decorated metates, appears to have been in Central Costa Rica. To a lesser degree, the 'falling off' factor can be already noticed quite clearly in adjacent Greater Chiriqui, the cultural zone between Central Costa Rica and Central Panama.

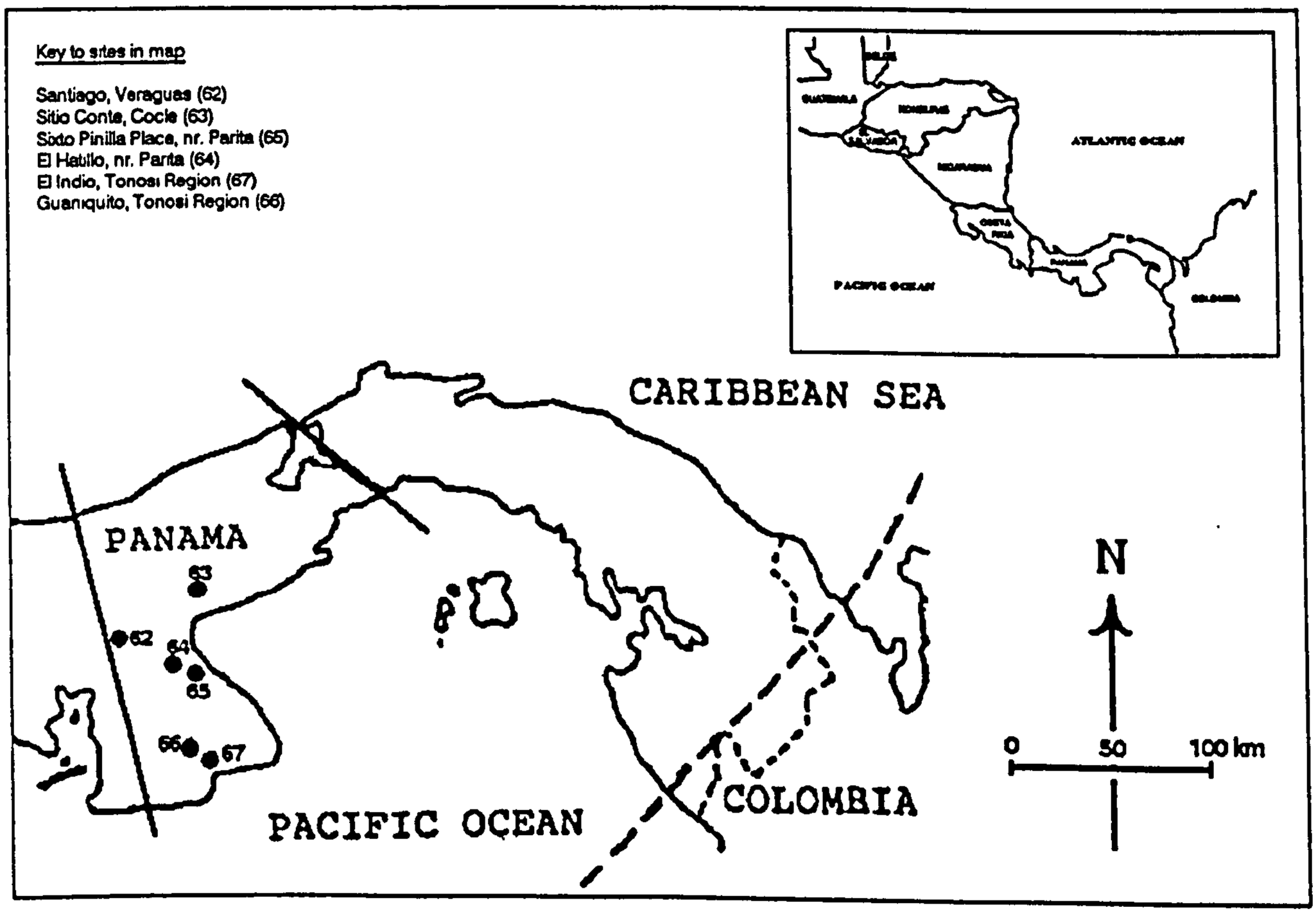


Fig. 26. Central Panama cultural zone with sites

--- Present political frontiers

——— Approximate boundaries of cultural zones

The following metate groups can be recognized in Central Panama:

MPM1.L3 (chapter II/C: 1a, p.72ff.)

MPM1.L3(PRO) (chapter II/C: 1e, p.83ff.)

MPM1.L4 (chapter II/C: 2a, p.87ff.)

MPM2.L4(ZOO/DH) (chapter II/D: 1d, p.134)

The earliest evidence known so far of decorated specimens falls into very late Period IV. Excavations at the habitation and cemetery site of El Indio in the Tonosi region, Azuero Peninsula (Ichon, 1980:170 ff.), produced fragments belonging to oval tripods, MPM1.L3, with small heads carved below the rim. The material was associated with El Indio phase ceramics of the period AD 250-500. Tripods of this kind are also reported from El Hatillo, near Parita (Mitchell and Asher, 1961:4; site referred to as 'Calderon') and from the region of Santiago, eastern Veraguas (Philip L.Dade ref.to example 522 in Vol.2). Metates such as these are known principally from the Central Costa Rican cultural region in late Period IV and early Period V but, although very similar in style to the Central Panamanian variety, it is not clear to what degree this was due to contact between the two regions.

The other early variety known from this region concerns the tripods with protrusions reminiscent of bird motifs carved into the underside of grinding plates, MPM1.L3(PRO). An example was excavated at the village site of Sixto Pinilla Place, near Parita, Herrera (Ladd, 1964:201), and is thought to belong to the Conte phase, AD 500-800. Metates of this kind are rare, and the only other recorded occurrences are from Las Palmas in western Veraguas (Lothrop, 1950:30) and Pueblo Nuevo, Rio Tabasera, southeastern Chiriqui. Both these sites are in the adjacent cultural zone of Greater Chiriqui but, in geographical terms, relatively close to the site near Parita. It can be assumed therefore that they represent a shared tradition. A certain affinity to the 'marimba' type metates from Central Costa Rica seems possible and was suggested earlier (see page 199).

The only other decorated examples from Central Panama are four-legged. At the habitation site of Guaniquito in the Tonosi region, Azuero Peninsula, Ichon (1980: 378) recovered a sub-rectangular metate, MPM1.L4(SRE), associated with Bijaguales phase ceramics of the period AD 800-1550. This specimen displays a chevron decoration carved in high-relief around the rim which represents a stylized version of two snake bodies whose heads meet at the top of the metate legs. This iconographic theme is peculiar to Panama, where stylizations of many different tropical animal species feature prominently both in traditions of pottery and goldwork.

The only effigy metates which have been reported from Central Panama are two examples known from Sitio Conte, Rio Grande de Cocle (Lothrop, 1937:96). The specimen recovered from Grave I of the MPM2.L4 variety, with rings carved on rim and legs, was considered by Lothrop to have been a trade piece from Chiriqui. The other specimen from Grave 5, with a small zoomorphic head carved at each end, appears to me to be a four-legged metate, MPM2.L4(ZOO/DH), although it is reported as a tripod (ibid.fig.62b). The majority of Conte burials are dated to the period between AD 400-900 (Cooke, 1976b:122ff.).

It is perhaps of interest to note that, in comparison to other Lower American cultural zones, the number of undecorated metates reported from Central Panama is quite large. Many of these undecorated pieces are sizeable, finely shaped and often with fairly thin grinding plates which would have been too fragile in daily use. This could mean that there were undecorated examples which may have served for special purposes or occasions only, including burials (Ichon, 1980:191). Examples have been excavated from both cemetery and habitation sites (Lothrop, 1937; Cooke, 1972:300ff.; Ladd, 1964; Ichon, 1980:170ff.).

As far as decorated metates are concerned, Central Panama represents the southeastern frontier of the Lower Central American cultural zone. It is

therefore not surprising that the occurrence of decorated metates, in a border region, is relatively sparse and sporadic.

CONCLUSIONS

I have examined personally some 300 of the metates in my corpus and recorded all the relevant details. Information on the remaining material was obtained either from published sources or by contact or correspondence with persons involved in excavations or in charge of museum or private collections. The classification proposed in Chapter II is based on a rigorous formal and stylistic analysis of all the information available from a total of 647 samples. Since the amount of known data on decorated metates from controlled investigations is relatively small, it is hoped that this classification will be of practical use to future researchers concerned with the Lower Central American cultural area.

The present study has shown that, during a span of some 1500 years from the 1st to the 16th century AD, prehispanic peoples in Lower Central America carved and modelled many of their metates in a distinctly individual manner and embellished them with geometric and figurative decorations using low or high-relief or openwork carving techniques. Decorated metates are virtually unknown from areas north of eastern Honduras or east of the Panama Canal and, therefore, they can justifiably be considered as an important cultural feature belonging to an essentially Lower Central American tradition in precolumbian times. However, within the isthmian metate tradition, regional variations can be recognized through

time, representing useful indicators of varying cultural patterns in an area from which no documentary evidence and very little ethnohistoric evidence is available.

A functional distinction has been made between two basic metate types: the 'special purpose metate' (SPM), used specifically for grinding soaked corn in the style still typical in Mexico today, and the 'multipurpose metate' (MPM) which appears in a variety of forms either for grinding corn or other substances, or for mashing or crushing tubers and fruits, or for pounding or pulverizing pigments or potter's clay.

Geographically, the distribution of these two basic metate types is clearly divided: the SPM occurs only in the northern part of the Lower Central American cultural area, in Greater Nicoya and in the Northern Zone, whereas the MPM type is the typical metate in the southern part, in Central Costa Rica, Greater Chiriqui and Central Panama. SPM types are, in general, three-legged, whereas MPM types occur with three or four legs, or on pedestals or figural-supported. Chronologically, tripods appear earlier than the four-legged and other varieties.

The most prolific period for the production of particularly fine and elaborately finished metates appears to have been during the first millennium, during late Period IV and Period V, in the cultural zones of Greater Nicoya and Central Costa Rica. Although evidence shows that the association of certain 'prestige' artifacts, such as elaborately decorated metates with finely carved stone maceheads and effigy pendants of jade, was apparently common to both regions in that period, the totally different metate styles in the two adjacent cultural zones indicate different regional traditions. While the Greater Nicoya metate remained throughout a three-legged SPM (special purpose) type, both of the effigy and non-effigy variety, the characteristic Central Costa Rican metate was a MPM1 (multipurpose non-effigy) type; effigy metates in Central Costa Rica were not made there until after AD 1000. In Greater Nicoya the production of metates stopped altogether after approximately AD 800.

It is tempting to suggest that the clear division in the distribution of the two functionally different metate types corresponds also to two main cultural traditions within the isthmian region. There was undoubtedly an initial centre where the idea of fashioning metates in a particular manner began. Evidence of decorated metates dating to the early centuries AD from both Greater Nicoya and Central Costa Rica indicates that this concept diffused early on to both these areas, and although the two adjacent cultural zones developed their own local metate traditions, they remained related during the early centuries AD, until about AD 500, through certain ideas or beliefs (viz. burials associated with a combination of particular 'prestige' artifacts; see above). The regional traditions as defined in Chapter IV support a division into two basic categories:

1) decorated SPM (special purpose metate) types belonging to the cultural areas of Greater Nicoya and the Northern Zone and

2) decorated MPM (multipurpose metate) types belonging to the Central Costa Rican, Greater Chiriquian and Central Panamanian cultural zones.

Similarly, it was shown in Chapter III that certain decorative features and techniques are virtually exclusive to either one or the other metate category. For instance, decorative motifs on grinding plates such as interlaced bands, meanders and patterns imitating basketwork, as well as 'filigree' type openwork carving on metate legs, are frequent on SPM types and almost non-existant on MPM types. On the other hand, nubs or stylized or naturalistic human heads carved around borders of grinding tops, occur only on MPM types, especially on non-effigy varieties.

Although two differing regional developments can be recognized,it is clear that the idea and concept of the decorated metate linked all the peoples from central Honduras to the Panama Canal through some 1500 years.

But why did the people in Lower Central America take the trouble to ornament their grinding implements, while metates anywhere else in precolumbian America remained undecorated?

One reason for it is undoubtedly the fact that andesite and other volcanic rock is readily available in Lower Central America and that this material is relatively easy to work.

Another possible reason is free time. People in the isthmian region lived in a favourable environment where relatively little effort was required to provide for their daily needs; suitable farmlands, water, salt, and materials for tools were available almost everywhere in adequate supply (Willey, 1981:376).

People who live in a reasonably pleasant and comfortable environment naturally fill in their leisure time with 'hobbies' and, I think, instinctively enjoy embellishing items such as pottery, textiles and other effects belonging to their daily life. I know from my own compatriots, the farmers in the Swiss mountains, that in the winter, when the days are short and the snow covers the ground so that no work can be done outside, they spend a lot of their free time woodcarving. Pinewood is locally available in abundance, and they make all sorts of different practical items for house and stable, including shelves and stools and other small furniture, troughs for water and for flowers, milk churns etc., embellishing many of the pieces with decorative motifs and patterns, often including elaborately carved illustrations of the sun, - their most important symbol of fertility. After long cold winters the warmth of the sun is awaited, first to melt the snow, then to warm the soil and eventually to ripen the harvests.

In Lower Central America the metate was - and still is - an important part of every household. Volcanic rock is available abundantly and, undoubtedly, inspired some people with time on their hands to sculpt and ornament their implements. It is understandable that, in a particularly lush area as, for instance, in Atlantic

Watershed Costa Rica, people were inspired by their surroundings. But the splendid representations of tropical birds, jaguars, coyotes and alligators are clearly not simply reflections of the environment; in the iconography people expressed their beliefs in the power manifested in this animal world. We can speculate that they intended, through the use of effigy metates and metates with complex animal imagery, to invoke avian, feline or reptilian behaviour, with a desire to acquire for themselves the capability to use those powers for their own purposes.

APPENDIX 1

THOUGHTS ON SPECIFIC THEMES

METATES OR SEATS?

It has been argued that some decorated metates served as ceremonial stools, thrones, seats, or 'seats of power' rather than as utilitarian items (Lange, 1984b: 175).

Lothrop's consideration that metates may have been employed as stools (Lothrop, 1926:291) is based on observations of Circum-Caribbean populations whose chiefs apparently sat on ceremonial stools of wood similar in shape to some of the decorated isthmian metates. Rouse (1948:532, 559) quotes that both the Arawak and the Caribbean populations buried their chiefs with their ceremonial stools. Lothrop lists the circular specimens on pedestals as 'stools' under objects from graves, but he admits that "the identification as stools is not absolutely accurate, for many ... show evidence of grinding upon the upper surface". Joyce (1916:77) remarks that "Between the stools and metates it is not easy to distinguish; the classification is quite arbitrary, and it may be that all are really metates, especially as the surface of many of these so-called stools exhibit traces of wear".

Mason (1945:220) defines certain oval and rectangular metates from the site of Las Mercedes, Atlantic Watershed area of Costa Rica, as seats due to their shape. Lehmann (1913:81), however, believes that isthmian people carved such seats in wood and that metates looking like stone seats were in fact used just for grinding.

Lange (1971a:242 ff.) suggests that "the ornamented ceremonial stool-metates may have been introduced into Costa Rica and other parts of Central America from the Circum-Caribbean area". Because only a few manos were recovered in association with numerous metates from a mortuary context in Greater Nicoya he concludes - referring to the cemetery site of Las Huacas - that "the so-called metates are a misnamed component of the burial complex".

It should not be discounted, however, that manos may have been re-used time and again, which could be the reason for their absence in the tombs.

The type of decorated metates to which Lange refers are the three-legged examples from Greater Nicoya. It is debatable whether these could have been used for sitting on, since such tripods would appear decidedly unbalanced as seats. Furthermore, their grinding plates are, in general, extremely thin and therefore relatively fragile. They could easily break in half under the weight of a human body.

Chenault (1984:176) states that the heavy amount of use evident on most tripods from the Cuenca de Arenal region in northwestern Costa Rica indicates that their primary function was grinding.

Archaeological evidence suggests that objects resembling metates were used as seats. Ceramic representations display persons seated on what look like four-legged metates, - never three-legged ones (MacCurdy, 1911:167; Ferrero, 1977:94; Stone, 1977:211; Snarskis, 1981b:191,195). It seems certainly possible that some of the more solid four-legged metates could have served the dual purpose of grinding implement and seat. But generally the marks of wear on the platforms tend to indicate definite grinding movements, and it is therefore more than possible that the principal function of such objects was as a metate. It is true that the surfaces are often smoothed down in the central areas, but the diameter of 'smoothness' is on the whole too narrow for it to have been caused by persons sitting on it.

Undoubtedly, seats similar to those used by chiefs of Circum-Caribbean tribes could have been carved out of wood in Lower Central America too. Finds in two graves at the Severo Ledesma site in Atlantic Watershed Costa Rica, dated to the period AD 1-500, included tools which appeared to be complete woodworkers' kits (Snarskis, 1984:209). Also, at Retes de Cartago in Central Highland Costa Rica, a circular wooden table was found with a close resemblance to the pedestal-based

decorated metate from Guayabo de Turrialba (example no.372). It was recovered from a cache and has a C14 date of AD 960.

It is thought that the reptilian effigy metates integrated with hourglass-shaped pedestals were used as seats. At the site of Papagayo in Pacific Costa Rica, sixteen such examples were recovered in association with house foundations (Baudez, personal communication). However, I have examined several similar specimens and found grinding marks in their concave top part. Clearly they could have served as both metates and seats, and perhaps also as potstands.

METATES IN RITUAL CONTEXT

Among the more elaborately carved and decorated isthmian metates are many which display an iconography so complex that a ritualistic association is indicated. In the absence of documentary evidence we have to turn to the archaeological record for possible clues.

"The demonstrable link between ceremonial metates and the best Costa Rican lapidary art suggests a ritual complex having to do with agriculture and its products" (Snarskis, 1984c:218). In the opinion of Snarskis (1981:44) the highly ornate metates may have represented 'badges of office' belonging to tribal chiefs who controlled production, distribution and also the processing of vital crops. He believes that the apparent population expansion in Lower Central America around the time of Christ was "the result of a dynamic feedback relationship between improved maize agriculture, new communities and growing competition for arable

land, creating an increasing need to obtain land and to administer the redistribution of food and other articles" (ibid.). Consequently ritual corn grinding or ritual processing of other foods could have been an important aspect in ceremonies relating to agricultural cycles. It is not unlikely that elaborately decorated metates were the property of tribal chiefs or, alternatively, the 'public property' of specific communities who used them in such rituals.

Involvement in hallucinatory rituals may be another possible explanation why such distinct grinding implements were manufactured. A variety of plants with hallucinogenic properties are known to grow in the Central American area (Schultes and Hofmann,1979) and, although there is neither documentary evidence nor any form of direct proof for the use of such substances in the region, the archaeological record does offer a few hints which lead us indirectly to the assumption that hallucinogens were processed and consumed in prehispanic times.

There is good evidence available in Costa Rica for the use of snuff in prehispanic times. Nasal snuffers made of pottery have been found dating back as far as the first century BC (El Bosque complex; Snarskis, 1982:94). It is thought that these were used for sniffing tobacco and for inhaling 'cojoba' snuff.

It is known that the snuffing practices of certain Amazonian tribes are closely associated with birds (Wassen, 1965). Curiously, the shape of the snuffing tubes from prehispanic Costa Rica is highly reminiscent of the basic bird form and is thought to be associated with soul flight. Both the eagle and the vulture are considered sacred birds in the mythology of many tropical people (Emboden, 1979:108) because of their keen sight and high flight and their ability to remain seemingly suspended in air. The Bribri believe that they entered the world as birds, and their myths refer to ancestors brought to earth by giant birds (Bozzoli, 1979).

The idea of the bird spirit represented by eagles and vultures combined with human images is found, during the early centuries AD as a prominent iconographic

element in isthmian artifacts of jade (Balser, 1980:53; Snarskis, 1981b:206) and other stone as well as in pottery (Snarskis, 1981b:210) and, a little later, also in gold (Cooke and Bray, 1985). Cooke (1984:246ff.) questions whether the 'gold eagles' from Central Panama and the "open-winged bird with a longish downcurved beak" - on Conte (AD 500-700) and Macaracas (AD 700-1100) polychrome pottery - is a hummingbird rather than a vulture or an eagle.

The composite human/bird representations of the late Period IV jade pendants form a large proportion of the Costa Rican lapidary work (Easby, 1981:139). The 'birdness' and the 'humanness' of these effigies varies, although the birds are all of the high-soaring species. It is thought (Snarskis, 1981:206) that these effigies were intended to represent the intermediaries between the individual, the community and the supernatural world. In other words they were the all-seeing eyes and ears of shamanistic personages. Such people have been described for the historic Talamancan tribes in Costa Rica (Bozzoli,1979; Ferrero, 1981:102).

The so-called 'flying-panel' metates, with their display of unusually complex imagery, are contemporary with the jade pendants. The 'ave pico' or other vultures or, possibly, hummingbirds are frequently present in the iconography and associated with human heads. It seems reasonable to suggest that such metates could have been in the hands of shamans and used for the processing of hallucinogens or other substances in ritual contexts.

The other curious element in the 'flying-panel' metates is the representation of humans portrayed as animals or humans wearing bird or alligator masks. Oviedo in his 'Historia Natural y General de las Indias' describes chiefs who were "great wizards and who were thought to have the power to convert themselves into alligators, jaguars" and, we may add, birds too. Undoubtedly, transformations of this kind required strong hallucinogenic potions, and it is not improbable that special metates portraying the transfiguration scene were used for their preparation. A 'flying-panel' metate which was reportedly found at the site of Azul

de Turrialba in Atlantic Watershed Costa Rica shows a figure wearing a bird mask standing upon two recumbent humans (VOL. TWO, example 323, p.268.). These as well as the human heads which line the rim of the metate are likely to be related to some sacrificial ritual.

Free-standing stone statues of male figures with animal masks are known from Nicaragua, Costa Rica and Panama. They are, however, of a much later date than the 'flying-panel' metates. Alligator masks are predominant and, in this connection the curious hour-glass shaped pedestals carved with alligator masks should be mentioned. As noted in Chapter IV, p.190 , several of these were excavated at the Papagayo site near the Pacific coast in northwestern Costa Rica. They are thought to have been stands for ritual offerings (Claude Baudez, personal communication) but they could have served also as miniature metates in the preparation of substances for such rituals. I have examined several such specimens in museum collections and found that most of them show some signs of wear from grinding.

Although the evidence for the use of hallucinogenic substances is indirect only, it is sufficiently valid to indicate that rituals involving such substances could have played a role of some importance in the lives and beliefs of ancient isthmian societies. Hallucinogenic experiences, in order to perceive the supernatural world to achieve power and to affect success in a curing ritual or in agriculture or in war or whatever, were more than likely an integral part of the daily life and culture of these societies.

HEADS ON METATES

Carved heads on metates were a prominent decorative motif in the Highland region and Atlantic Watershed area of Costa Rica and also in western Panama. The heads appear both in stylized and naturalistic form and are often referred to in the literature as trophy heads. Since we have no documentary evidence, it is arguable whether they represent genuine tribal trophies or whether they were intended simply as images symbolizing power. It has also been suggested that some heads may have been carved to portray a chief or another important member of a particular tribe or clan.

The earliest appearance of heads on metates known to date occurred in the Atlantic Watershed area of Costa Rica in late Period IV, during the early centuries AD. Small stylized heads are found carved around the rim of large tripod 'marimba' and 'flying-panel' metates (see Chapter II, p.77,82). On the latter type the heads appear sometimes well-defined in naturalistic form and, frequently, there are additional heads sculpted into the imagery below the platform, on the panel, or into the legs. It is not unusual to find these heads associated with dangerous animals, e.g. vulture-like birds or felines. The three legs of the 'flying-panel' metates often have birds or just bird heads modelled on the outside, holding human heads in their long beaks. Another motif shows felines with heads in their paws.

In highland Chiriqui, western Panama, giant oval metates appeared slightly later, around AD 400, with naturalistic heads carved around the edge (see Chapter IV, p.201). They are different from the Costa Rican metates; they have four legs and, as a rule, oval-shaped concave grinding tops. And whereas the 'flying-panel' metates of Costa Rica have heads associated with vultures and felines, the examples from highland Chiriqui - especially around the site of Barriles - are

associated with human figures. These metates have legs carved in the form of human figures and some of these carry or support heads. Some wear necklaces with anthropomorphic pendants (Linares, 1977:24,fig.7), similar to those worn by life-size stone figures known from Barriles, some of which hold a head in one hand and a weapon in the other.

The 'flying-panel' metates from western Veraguas resemble those from the Atlantic Watershed Costa Rica except that the imagery displayed in the panel is far less complex compared to the Costa Rican examples. Some have plain borders, but others also display small stylized heads carved around the edge of the grinding plate, just like their contemporaries across the border.

Although the metates after AD 500 became a lot simpler in style, the use of carved heads in the decoration, especially around the edge of the grinding platform, remained a feature both in Central Costa Rica and in Greater Chiriqui.

After AD 1000 the carved head motif disappeared almost entirely from metates. This is puzzling because, precisely at this time, freestanding statues became very popular in central and eastern Costa Rica. They often depict bound prisoners or warriors with a head in one hand and a weapon in the other, or with a head hanging from a rope slung over the shoulder. Small freestanding human stone heads were manufactured too at that time. However, the carved head motif is virtually absent from metates from then onwards.

Ethnohistoric evidence indicates that the practice of head-hunting and the sacrificial beheading of captives was common amongst ancient isthmian societies (Oviedo, 1851-55,3:127). It has been suggested that this practice related to battles for land (Snarskis, 1984c:219) or for achieving status and gaining prestige (Linares, 1976:15).

Tribes of Veraguas and elsewhere in Panama are said to have kept their villages well stocked with human heads (Metraux, 1963,5:407), and Oviedo reports

(1851-55,4:40-46) that the Nicarao exposed the heads on trees in front of temples. Stone (1966:231) believes that this last practice might have developed from the domestic ritual of assuring good hunting by keeping skulls from the chase on poles by the dwellings, a tradition which is still customary today in certain areas of eastern Central America.

Fray Agustin de Ceballos, who had lived in Costa Rica and Nicaragua for over 20 years, wrote in 1610 to the King of Spain, Felipe III (anon., 1936:12) that the people on the north coast were continuously at war with each other, "the cause of this is the custom of sacrificing some persons to the devil on the occasion of every new moon, and when they do not have these human offerings, to avoid sacrificing people from their own nation, they seek them among others and sacrifice those whom they capture; if they have a surplus they sell them to their neighbours for the same purpose".

Don Andres Cerezeda, who accompanied Captain Gil Gonzalez de Avila as King's Treasurer when he entered Nicaragua in 1522, wrote that "... every chief maintains certain persons for sacrifice", and later he adds that the bodies of those sacrificed "were cut into pieces and distributed amongst the priests, nobility and the people. But the head is hung, as a trophy, upon the branches of certain small trees, which are preserved for that purpose near the place of sacrifice". (Squier,1853:358 ff.)

It is thus not improbable that the ostentatious display and representation of heads as trophies was an ancient custom.

In a paper discussing 'Ritual and Symbol in Native Central America' Linares (1976:15) says: "Given the absence of strict rules of hereditary ranking and aristocratic succession, warfare seems to have been one of the most important ways of achieving status and gaining prestige".

In all probability warfare and sacrifice were important aspects in the life of prehispanic isthmian tribal societies througout the ages, and the conspicuous

display of heads as trophies was most likely an ancient custom. The interpretation of the carved heads on metates as trophies or sacrificial heads is therefore clearly more plausible than seeing them as portraits of clan members.

Recognizable features indicating death include closed eyes or blank eye sockets and mouths closed or grimacing (Leibsohn, 1988:135). However, the majority of heads on metates are not at all clearly defined, the extreme case being the nubs carved around the rims of grinding platforms. Is it possible to interpret these as heads? Since some metates display naturalistic heads carved around the border, I believe that the nubs were made to serve the same purpose and that they can therefore be said to represent stylized effigies or symbols of trophy or sacrificial heads. To distinguish one from the other is a problem, since heads on metates are generally without bodies. Some of the giant metates from Barriles in highland Chiriqui are an exception, and it has been suggested that these metates served possibly as sacrificial platforms to prepare the bodies of war captives for ritual consumption (Graham, 1981:123). By extension this could apply also to the smaller versions known from Costa Rica, a suggestion which has some support in Cerezeda's report mentioned earlier.

Metates with stylized heads carved around the border, or with nubs or notches symbolizing heads, were used as burial platforms. Several burials have been found with bodies laid out over two or three metates. It is tempting to speculate that, in the belief system of ancient isthmian societies, this was the way to be transformed and perhaps reborn.

APPENDIX 2

THE DATABASE

METHODOLOGY

The database management system I used initially for this study was DBaseIV. However, I changed later to Foxbase Professional which I found more user friendly.

The programme enabled me not only to store the information I was collecting on decorated metates, but also to retrieve and manipulate the recorded data as required for various analyses and for the final classification.

Foxbase allows the user to have a number of different files, and each file can hold 255 fields per record.

My principal file was the METATE.DBF (database file) for which I created a structure with 43 different fields for each recorded metate. I devised a format similar to a file card, in two parts, for each decorated metate. Part one contains general information, while part two refers specifically to decorative details. A brief description of the database structure follows.

Part 1: GENERAL INFORMATION

ID-No	Identity number: number given to the metate at the time of recording it.
TYPE	Type of metate: SPM = special purpose, MPM = multipurpose.
SUB	Subtype: '1' = non-effigy, '2' = effigy.

CAT — Category:
description of metate base and specific features, e.g.
L3/TRA = 3 trapezoidal legs, or
L4(FEL) = 4-legged feline effigy.

UJ CLASS — Classification code:
a hierarchical code system devised to reflect the different metate features, i.e. functional type, type of base, aspect and form of grinding plate as well as specific attributes. The code is expressed in a maximum of six letters, organized alphabetically. Such an organisation places each object automatically into its proper hierarchical position. This classification method provided the principal aid for the various analyses in my study.

UJ-No — Personal number:
my own number given to one of several metates in a collection at the time of recording it. It starts generally with the initial of the collection (or, sometimes, publication) from which it was recorded, e.g. BM7 = British Museum no.7.

ILL — Illustration:
number or name of negative, if photographed by myself; otherwise details of existing illustrations.

COLL — Collection:
name of collection (or publication) and inventary number, if known.

COLL.REM — Collection remarks:
additional information referring to collection.

PQ — Provenance qualification:
qualified indication of provenance details, i.e.
0 = unknown,
1 = vague information,
2 = provenance known,
3 = recorded excavation details.

PROV — Provenance:
indication of cultural zone, if known.

PROV.REM — Provenance remarks:
remarks relevant to provenance details.

REF — Reference:
relevant to excavation details, excavators, publications etc.

SQ — Qualification of overall size:
qualitative indication of knowledge regarding overall length or diameter, width and height of metate, i.e.
0 = totally unknown,

1 = 1 of 3 measurements known,
2 = 2 of 3 measurements known,
3 = all 3 measurements known.

L — Length:
overall length of metate in cm.

W — Width:
overall width of metate.

H — Height:
overall height of metate.

D — Diameter:
overall diameter of metate.

GRT-S — Grinding top size:
relative size of grinding top, i.e.
'>' = small,
'>>' = very small,
'#' = average,
'<' = large,
'<<' = very large.

GRT-FM — Grinding top form:
form of grinding plate, i.e.
REC = rectangular,
SRE = sub-rectangular,
OVL = oval,
CIR = circular.

GRT-ASP — Grinding top aspect:
aspect of grinding plate, i.e.
NRI = no rim,
SRI = slight rim,
DRI = deep rim,
SCO = slightly concave,
DCO = deeply concave.

BASE — Base of metate:
type of base structure, i.e. 3 or 4 legs, pedestal, etc.

BASE-S — Base size:
relative size of base of metate, i.e.
'>' = short,
'#' = average,
'<' = long.

STONE — Stone or rock characteristics, if known.

WEAR — Wear marks:
qualitative indication of wear marks from grinding, if apparent, i.e.
' >' = slight,
'#' = average,
'<' = strong.

EMPH — Emphasis:
emphasis of wear marks, if recognizable.

REM — Remarks:
additional remarks referring to metate in general.

Part 2: DECORATION DETAILS

STYLE — Stylistic aspect of decorations, i.e.
GEO = geometric,
NAT = naturalistic,
STY = stylized.

TECH — Technique:
mode of carving decorations, i.e.
LR = low-relief,
HR = high-relief,
OW = openwork,
MO = modelled.

MOT-Q — Motif qualification:
qualitative designation of effigy motif, i.e.
0 = unidentified,
1 = vaguely recognizable,
2 = probable,
3 = definite.

MOT — Motif:
specified motif of effigy, e.g. FEL = feline.

SPEC — Special (additional) features.

GRT-ABV — Grinding top above:
details of decoration on grinding top above.

GRT-BEL — Grinding top below:
details of decoration on grinding top below.

RIM — Details of decoration on rim.

APP Appendage:
occurrence of appendages, e.g. surmounts at the end of grinding plates.

FLY-P Flying-panel:
decoration details on panel hanging from underside of grinding platform.

HEAD Details of decoration on head.

TAIL Details of decoration on tail.

BASE FM Form of base:
description of base structure, i.e.
3L = 3 legs,
4L = 4 legs,
PE = pedestal,
FS = figural-supported,
HS = human-supported,
AS = animal-supported,
ATL = atlantean-supported.

BASE MOT Base motif:
motif of type supporting grinding plate, e.g. ATL = atlantean, or MON = monkey figures.

BASE-DECO Base decoration:
details of decoration on metate base.

DEC-REM Decoration remarks:
remarks referring to decorative details.

APPENDIX 3

RECORD SHEETS WITH DECORATION DETAILS

(SORTED BY IDENTITY NUMBER)

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
1	10	SPM 1 L3/CON(GEO)	78.0	.0	2	10A	10A						09D
2	7	SPM 1 L3/CON(GEO)	46.0	.0	0	08A	08A						09D/10A
3	9	SPM 1 L3/CON(GEO)	66.0	.0	0	10A	10A/01A						09D/10A
4	11	SPM 1 L3/CON(GEO)	80.0	.0	0	02A	01A/02A						
5	46	SPM 1 L3/TRA(H)	44.0	.0	0	09D/10A		03A	LUG:BIN				12A/05A/09D
6	49	SPM 1 L3/TRA(H)	47.0	.0	2	10A		01B/09D	LUG:EYE/09A				12A/09D
7	36	SPM 1 L3/TRA(H)	37.0	.0	0	10A/09D/04A	01A	09D/04A/06A	LUG:EYE/AHD				12A/05A/09D
8	65	SPM 1 L3/TRA(H)	65.0	.0	2	10A	10A	10A/09D	LUG:BIN				12A/09D
9	52	SPM 1 L3/TRA(H)	49.2	.0	0	09D/07A	10A/01A	09D	LUG:BIN				12A
10	66	SPM 1 L3/TRA(H)	65.0	.0	0	10A	10A		LUG:BIN				(12A)
11	42	SPM 1 L3/TRA(H)	41.0	.0	0	10A/09D		01F	LUG:EYE				12A/09D
12	73	SPM 1 L3/TRA(K)	44.0	.0	0	02A	02A		LUG				09D/(12A)
13	33	SPM 1 L3/TRA(H)	34.0	.0	0	10A	09D/02A	01C	LUG:BIN				12A/09D
14	41	SPM 1 L3/TRA(H)	39.0	.0	0	02A/10A	01A	10A	LUG:EYE/JHD				12A/09D/03A
15	75	SPM 1 L3/TRA(K)	53.5	.0	2	02A	01A		LUG				12A/09D
16	32	SPM 1 L3/TRA(H)	32.0	.0	0	09D	01A/09D	09D	LUG:BIN				12A
17	37	SPM 1 L3/TRA(H)	37.0	.0	0	02A/09D	01F/09D/05A		LUG:BIN				12A/09D
18	43	SPM 1 L3/TRA(H)	41.0	.0	0	10A/09D/09A	09D	09D/04A/01B	LUG:BIN				12A
19	70	SPM 1 L3/TRA(K)	36.0	.0	0	02A	01F		LUG:ZHD				12A/09D
20	44	SPM 1 L3/TRA(H)	41.0	.0	0	10A			LUG				(12A)
21	71	SPM 1 L3/TRA(K)	37.5	.0	0	10A	10A	09D	LUG				12A/09D
22	77	SPM 1 L3/TRA(K)	69.0	.0	2	02A	01A/02A		LUG:ZHD				12A/09D
23	62	SPM 1 L3/TRA(H)	57.0	.0	2	10A/09D	09D		LUG:BIN				12A/09D
24	74	SPM 1 L3/TRA(K)	48.0	.0	2	08A	01A		LUG:ZHD				12A/09D/05A
25	99	SPM 2 L3/TRA/OFR(AVI)	65.0	.0	0	10A/09D		13A/09D/01C			NAT/05A		12A
26	84	SPM 2 L3/TRA/OFR(AVI)	30.0	.0	2	02A/10A	01A/05A/09A	09D/04A			NAT/11A/09D		12A/03A/09D
27	87	SPM 2 L3/TRA/OFR(AVI)	44.5	.0	2	02A/10A	01A/09D/10A	09A/09D/13A			NAT/06B		12A/13A/09D
28	94	SPM 2 L3/TRA/OFR(AVI)	52.0	.0	0	?	?	09D/10A			NAT		12A/05A/09D
29	86	SPM 2 L3/TRA/OFR(AVI)	43.0	.0	0	09D		07A			NAT/O9D		12A/01B/05A
30	89	SPM 2 L3/TRA/OFR(AVI)	45.5	.0	0	02A/10A					STY/ANT		12A
31	97	SPM 2 L3/TRA/OFR(AVI)	60.0	.0	1	02A/10A		07A			NAT		09D/(12A)
32	180	SPM 2 L3/FSL(REP)	75.0	.0	0						NAT		12A
33	105	SPM 2 L3/TRA/OFR(CAN)	44.0	.0	0	09D		09D			12A/09D		12A/09D/06A

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
34	159	SPM 2 L3/ANG(REP)*	54.0	.0	0						NAT		
35	138	SPM 2 L3/TRA/OFR(REP)	52.0	.0	0	09D/10A	09D	09D/10A/01B			NAT		12A/15B/13A
36	131	SPM 2 L3/TRA/OFR(BOX)	55.0	.0	1	10A	01A	09D			STY/09C/09D		12A/09C/09D
37	133	SPM 2 L3/TRA/OFR(BOX)	65.0	.0	0	10A	09D/10A	09D/10A			STY/09D/10A		12A/09D/10A
38	129	SPM 2 L3/TRA/OFR(BOX)	49.0	.0	0	10A	01A	09D/10A			STY/09D		12A/09D/10A
39	130	SPM 2 L3/TRA/OFR(BOX)	50.0	.0	0	09D	01A/01F	09D/09A/04A			STY		12A/09D/10A
40	145	SPM 2 L3/TRA/OFR(ZOO)	33.0	.0	0	01D/10A	01B/01D				STY		12A
41	153	SPM 2 L3/TRA/SOL(ZOO)	39.0	.0	0								
42	168	SPM 2 L3/ANG(REP)	86.0	.0	1			10A			STY/05A/11A		
43	171	SPM 2 L3/ANG(REP)	120.0	.0	1			10A			STY/05A/11A		
44	184	SPM 2 L4/TRA/OFR(BOX)	45.0	.0	1	10A	PAN	10A			05A/18A		12A/09D/05A
45	187	SPM 2 L4/TRA/OFR(ZOO)	45.0	.0	2	02A	PAN				STY		12A/09D
46	216	MPM 1 L3(REC/NRI)	38.5	.0	0			17A					
47	218	MPM 1 L3(REC/NRI)	58.0	.0	0			17A					
48	23	SPM 1 L3/CON(EFF)*	62.0	.0	0		MON						
49	83	SPM 2 L3/CON(ZOO)	40.0	.0	1								
50	204	MPM 1 L3(OVL)*	56.5	.0	1			01F					09D
51	251	MPM 1 L3(FP+/REC)	68.0	.0	0			17A		AVI/SNA			AVI/SNA
52	262	MPM 1 L3(FP+/SRE)	50.0	.0	0			17A		ANT/TRO			AVI/TRO
53	285	MPM 1 L3/EFF(SRE)	108.0	.0	0			17A					
54	281	MPM 1 L3/EFF(SRE)	33.0	.0	0			17A					
55	283	MPM 1 L3/EFF(SRE)	36.0	.0	0			17A					
56	237	MPM 1 L3(FP/SRE)	76.5	.0	0			17A		ZOO			
57	219	MPM 1 L3(MAR/REC)	57.0	.0	0		APP	17A					
58	230	MPM 1 L3(MAR/SRE)	67.0	.0	0		APP	17A					
59	228	MPM 1 L3(MAR/SRE)	59.0	.0	0		APP	17A					AVI
60	231	MPM 1 L3(MAR/SRE)	68.0	.0	0		APP	17A					
61	229	MPM 1 L3(MAR/SRE)	59.0	.0	1		APP	17A					
62	225	MPM 1 L3(MAR/SRE)	44.0	.0	0		APP	17A					
63	190	MPM 1 L3(REC)	61.0	.0	0			17A					
64	205	MPM 1 L3(OVL)	62.5	.0	0			17A					
65	194	MPM 1 L3(SRE)	64.0	.0	0			17A					
66	209	MPM 1 L3(CIR)	0.0	26.0	0			17A					

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
67	207	MPM 1 L3(CIR)	0.0	23.0	0			17A					01F
68	211	MPM 1 L3(CIR)	0.0	34.0	0			17A					
69	208	MPM 1 L3(CIR)	0.0	25.5	0			17A					
70	213	MPM 1 L3(CIR)	0.0	39.0	0			17A					
71	210	MPM 1 L3(CIR)	0.0	33.0	1			17A					
72	215	MPM 1 L3(CIR)	0.0	44.0	0			17A/ZHD					
73	203	MPM 1 L3(OVL)*	36.0	.0	0			AHD/LIZ					
74	198	MPM 1 L3(OVL)	27.0	.0	0			17A					
75	289	MPM 1 L4(OVL)	55.0	.0	0			AHD					
76	290	MPM 1 L4(OVL)	63.5	.0	0			AHD/17A					
77	294	MPM 1 L4(SUR/OVL)	30.0	.0	0			01F/11A/17A	SUR/16A				
78	295	MPM 1 L4(SUR/OVL)	30.0	.0	1			01F/11A/17A	SUR/AVI				
79	299	MPM 1 L4(SUR/OVL)	32.5	.0	0			01F/11A/17A	SUR/16A				
80	304	MPM 1 L4(SUR/OVL)	38.0	.0	0			01F/11A/17A	SUR/16A				
81	302	MPM 1 L4(SUR/OVL)	34.0	.0	0			01F/11A/17A	SUR/16A				
82	298	MPM 1 L4(SUR/OVL)	31.5	.0	1			01F/11A	SUR/16A				
83	305	MPM 1 L4(SUR/OVL)	47.0	.0	2			01F/17A	SUR/AHD				
84	296	MPM 1 L4(SUR/OVL)	31.0	.0	0			01F/AHD	SUR/04A/16A				
85	316	MPM 1 L4/HS(OVL)	22.5	.0	0			AHD					(ANT)
86	320	MPM 1 L4/HS(OVL)	38.5	.0	2			01F/AHD					(ANT)
87	323	MPM 1 L4/HS(OVL)	54.5	.0	0			01F/AHD					(ANT)
88	318	MPM 1 L4/HS(OVL)	30.5	.0	0			01F/AHD					(ANT)
89	321	MPM 1 L4/HS(OVL)	38.5	.0	2			01F/AHD					(ANT)
90	310	MPM 1 L4(SUR/PAN/OVL)	27.0	.0	0			11A/17A	SUR/16A				AHD
91	338	MPM 1 PE/FLS	0.0	20.0	0			JHD					12A
92	336	MPM 1 PE/FLS	0.0	15.5	0			01F/AHD					12A
93	348	MPM 1 PE/FLS	0.0	29.0	0			JAG					12A
94	351	MPM 1 PE/FLS	0.0	45.0	3			JHD					12A
95	335	MPM 1 PE/FLS	0.0	14.0	0			JHD					12A
96	343	MPM 1 PE/FLS	0.0	24.0	0			ZHD					12A
97	350	MPM 1 PE/FLS	0.0	31.0	2			ZHD					(12A)
98	334	MPM 1 PE/ODD*	0.0	11.0	0			17A<					
99	337	MPM 1 PE/FL*	0.0	19.0	0			01F/17A<					

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
100	340	MPM 1 PE/FLS	0.0	22.0	2			AHD					12A
101	358	MPM 1 PE/FLL	0.0	44.0	2			AHD					12A
102	344	MPM 1 PE/FLS	0.0	24.0	1			JHD					12A
103	342	MPM 1 PE/FLS	0.0	23.0	0			JHD/(08A)					12A
104	366	MPM 1 PE/DRU	0.0	23.0	0			ZHD					12A
105	363	MPM 1 PE/DRU	0.0	18.0	3			11A					12A/ANT/02A
106	355	MPM 1 PE/FLL*	38.5	.0	0			01F/AHD					06B
107	333	MPM 1 PE/ODD*	32.0	.0	0			AHD/17A					
108	315	MPM 1 L4(PAN/NRI)*	30.5	.0	0								
109	360	MPM 1 PE/BIC	0.0	29.0	0			04A/06A/09A					10A
110	362	MPM 1 PE/BIC	0.0	29.5	0			09D/10A					AHD/13A/09D
111	361	MPM 1 PE/BIC	0.0	29.0	0			09D					09D
112	396	MPM 1 ATL/RB(CIR)	0.0	22.0	0								(SIM)
113	397	MPM 1 ATL/RB(CIR)	0.0	24.0	0			09D					(SIM)
114	381	MPM 1 FS/RB(CIR)	0.0	24.0	2			(09D)					(FEL)
115	379	MPM 1 FS/RB(CIR)	0.0	22.5	0			10A					(SIM)
116	398	MPM 1 ATL/RB(CIR)	0.0	24.0	2			07A					(SIM)
117	374	MPM 1 FS/RB(CIR)	0.0	15.0	2			08A					(ZOO)
118	393	MPM 1 ATL/RB(CIR)	0.0	20.0	0			06B					04A/09D(?FEL
119	392	MPM 1 ATL/RB(CIR)	0.0	12.5	2								(SIM)
120	377	MPM 1 FS/RB(CIR)	0.0	20.0	2								(FEL)
121	375	MPM 1 FS/RB(CIR)	0.0	16.5	2			06B					(FEL)
122	376	MPM 1 FS/RB(CIR)	0.0	18.0	2			07A					(FEL)
123	329	MPM 1 L4/AS(SUR/OVL)	30.0	.0	0			01F/AHD	ZOO				
124	382	MPM 1 ATL(REC)*	24.0	.0	0			09D/10A/03A					(SIM)
125	372	MPM 1 FS(OVL)	16.0	.0	2								(SIM)
126	388	MPM 1 ATL(CIR)	0.0	18.0	0			08A					(ANT)
127	373	MPM 1 FS(CIR)	28.0	.0	0			10A					(FEL)
128	429	MPM 2 L4(FEL/REC)	40.0	.0	0			06B			06B	06B/TRL	06B
129	426	MPM 2 L4(FEL/REC)	36.0	.0	2							TLL	
130	331	MPM 1 L4/AS(SUR/OVL)	35.0	.0	0			11A/17A					(SIM)
131	371	MPM 1 FS(OVL)	14.5	.0	0			04A/09D					(FEL)
132	386	MPM 1 ATL(CIR)	0.0	15.0	0								(ANT)

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
133	425	MPM 2 L4(FEL/REC)	34.0	.0	0			01D				06B/TRL	06B
134	427	MPM 2 L4(FEL/REC)	37.0	.0	0			08A			01C	14A/TRL	
135	421	MPM 2 L4(FEL/REC)	31.0	.0	0			08A			06B	06B/TRL	06B
136	410	MPM 2 L4(FEL/REC)	17.5	.0	0			10A			06A/13A	06A/TRL	
137	412	MPM 2 L4(FEL/REC)	19.0	.0	0			01B				TRL	01B
138	422	MPM 2 L4(FEL/REC)	31.0	.0	2			08A				14A/TRL	
139	416	MPM 2 L4(FEL/REC)	29.0	.0	2			03A			09D	TRL	
140	434	MPM 2 L4(FEL/REC)	45.0	.0	0			08A				14A/TRL	
141	418	MPM 2 L4(FEL/REC)	30.0	.0	0			09D				09D/TRL	
142	582	MPM 2 L4(FEL/LOO/OVL)	32.0	.0	2			09D			13A	LOO	
143	583	MPM 2 L4(FEL/LOO/OVL)	32.5	.0	3			05A			05A	05A/BIF/LOO	05A
144	470	MPM 2 L4(FEL/OVL)	24.0	.0	0			06A/09D			06A	06A/TRL	06A
145	481	MPM 2 L4(FEL/OVL)	33.0	.0	2			03A			09D	06B/TRL	06B
146	514	MPM 2 L4(FEL/OVL)	50.0	.0	0			01B/09D			06B	06B/TRL	06B
147	500	MPM 2 L4(FEL/OVL)	42.0	.0	0			08A				14A/TLL	
148	509	MPM 2 L4(FEL/OVL)	48.0	.0	0			08A			06B	06B/TRL	06B
149	517	MPM 2 L4(FEL/OVL)	56.0	.0	0			01F/01B			13C	09D/TLL	13C
150	482	MPM 2 L4(FEL/OVL)	33.0	.0	0			11A/17A				TRL	
151	534	MPM 2 L4(FEL/OVL)	87.0	.0	0			01E/05A/09D			05A	06B/TRL	
152	622	MPM 2 L4(ZOO/OVL)	21.0	.0	0							TRL	
153	510	MPM 2 L4(FEL/OVL)	48.0	.0	2			07A				TRL	
154	485	MPM 2 L4(FEL/OVL)	35.0	.0	0			03A/09D			09D	06B/TRL	06B
155	598	MPM 2 L4(REP/OVL)	126.0	.0	3			05A				TLL	
156	503	MPM 2 L4(FEL/OVL)	44.0	.0	1			AHD			06B	06B/TRL	06B/13B
157	504	MPM 2 L4(FEL/OVL)	45.0	.0	0			08A				14A/TRL	
158	506	MPM 2 L4(FEL/OVL)	47.0	.0	0			08A			06B	08A/TRL	
159	569	MPM 2 L4(FEL/PAN/SRE)	55.0	.0	0			11A				(TRL)	JAG
160	462	MPM 2 L4(FEL/SRE)	62.0	.0	0			08A			09D	TRL	06B
161	459	MPM 2 L4(FEL/SRE)	55.0	.0	1			10A			06B	09D/TRL	06B/13B
162	446	MPM 2 L4(FEL/SRE)	35.0	.0	2			06A			06A		06A/06B
163	463	MPM 2 L4(FEL/SRE)	70.0	.0	0			11A/17A					
164	465	MPM 2 L4(FEL/SRE)	84.0	.0	0			01D/11A				TRL	
165	443	MPM 2 L4(FEL/SRE)	31.0	.0	0			01F			09D	(TLL)	06B

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
166	461	MPM 2 L4(FEL/SRE)	58.5	.0	2			11A					
167	448	MPM 2 L4(FEL/SRE)	38.0	.0	0			01F/06B			06B	06B	06A/13B
168	444	MPM 2 L4(FEL/SRE)	31.0	.0	0			09D/06B			06A	06A	
169	453	MPM 2 L4(FEL/SRE)	46.0	.0	1			11A			06B	09D/TLL	06B
170	464	MPM 2 L4(FEL/SRE)	75.0	.0	0			03A			06B	06B/TLL	06B
171	458	MPM 2 L4(FEL/SRE)	54.0	.0	0			11A				TRL	
172	625	MPM 2 L4(ZOO/OVL)	26.5	.0	0			17A				TRL	
173	497	MPM 2 L4(FEL/OVL)	40.0	.0	2			10A			06B	TLL/14A	
174	472	MPM 2 L4(FEL/OVL)	24.5	.0	0			01F			03A	TRL	
175	505	MPM 2 L4(FEL/OVL)	46.0	.0	3			07A				06B/TRL	13C
176	511	MPM 2 L4(FEL/OVL)	48.0	.0	0			01F/06B			06B	06B/TRL	06B/09D/11A
177	531	MPM 2 L4(FEL/OVL)	78.0	.0	0			14A			13A/01C	TRL	
178	493	MPM 2 L4(FEL/OVL)	38.0	.0	2			08A			06B	08A	
179	492	MPM 2 L4(FEL/OVL)	37.0	.0	0			08A				14A/TLL	
180	476	MPM 2 L4(FEL/OVL)	28.0	.0	0			08A			05A	14A/TRL	
181	445	MPM 2 L4(FEL/SRE)	33.0	.0	0			01D/09D			09D	06B/TRL	06B/05A
182	450	MPM 2 L4(FEL/SRE)	44.0	.0	0			06B			09D/01C	14A/TRL	06B
183	486	MPM 2 L4(FEL/OVL)	35.0	.0	0			08A/10A			01B	05A/09D/TLL	06B
184	478	MPM 2 L4(FEL/OVL)	30.0	.0	0			08A			05A	TLL	
185	475	MPM 2 L4(FEL/OVL)	27.0	.0	0			01D			09D	09C	
186	454	MPM 2 L4(FEL/SRE)	47.0	.0	2			01B				(TRL)	
187	544	MPM 2 L4(FEL/CIR)	42.0	.0	0			01F			01C/09D	08A/TRL	13C
188	477	MPM 2 L4(FEL/OVL)	28.0	.0	2			08A				TRL	
189	480	MPM 2 L4(FEL/OVL)	32.0	.0	0			06B			06B	TRL	06B
190	487	MPM 2 L4(FEL/OVL)	35.0	.0	3			08A			JHD	TRL/06B	
191	549	MPM 2 L4(FEL/NRI)	45.0	.0	0			10A			09D	TLL	09D
192	547	MPM 2 L4(FEL/NRI)	32.0	.0	0			(08A)				06B/TRL	
193	442	MPM 2 L4(FEL/SRE)	30.0	.0	0						06B	(TRL)	
194	447	MPM 2 L4(FEL/SRE)	36.0	.0	2			03A				TRL	
195	484	MPM 2 L4(FEL/OVL)	34.5	.0	0			04A				TRL	
196	468	MPM 2 L4(FEL/OVL)	22.0	.0	2							TRL	
197	471	MPM 2 L4(FEL/OVL)	24.0	.0	0			03A			09D	TLL	
198	590	MPM 2 L4(REP/OVL)	37.0	.0	0							TLL	

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
199	483	MPM 2 L4(FEL/OVL)	33.0	.0	0			03A				09D/TRL	05A
200	623	MPM 2 L4(ZOO/OVL)	23.0	.0	0							TRL	
201	441	MPM 2 L4(FEL/SRE)	26.0	.0	0			01F/01B			05A	06B/TRL	06B
202	469	MPM 2 L4(FEL/OVL)	23.5	.0	0			09D			09D/13A	06B/09D/TLL	06B
203	473	MPM 2 L4(FEL/OVL)	25.0	.0	0			08A				06A/TRL	06A
204	561	MPM 2 L4(FEL/DH/OVL)	55.0	.0	0			07A			06B		
205	557	MPM 2 L4(FEL/DH/OVL)	27.5	.0	1			08A					
206	612	MPM 2 L4(REP/LDH/SRE)	24.5	.0	0			01F/ZHD					15B
207	613	MPM 2 L4(REP/LDH/SRE)	32.0	.0	0								15B
208	615	MPM 2 L4(REP/LDH/SRE)	35.0	.0	2			01F/17A					15B
209	635	MPM 2 L4(ZOO/LDH/OVL)	30.0	.0	2			17A					
210	634	MPM 2 L4(ZOO/LDH/OVL)	28.5	.0	0			AHD					
211	580	MPM 2 L4(FEL/PDH/OVL)	26.0	.0	0			03A					
212	614	MPM 2 L4(REP/LDH/SRE)	34.0	.0	0			ZHD					15B
213	616	MPM 2 L4(REP/LDH/SRE)	56.0	.0	0			ZHD					
214	589	MPM 2 L4(REP/OVL)	36.0	.0	0			10A/09D/11A				06B/TRL	06B/15A/11A
215	608	MPM 2 L4(REP/LOO/OVL)	35.0	.0	0			06B				LOO	
216	624	MPM 2 L4(ZOO/OVL)	23.0	.0	0			17A					
217	603	MPM 2 L4(REP/DH/NRI)	40.0	.0	2			AHD/STY/11A					09D/11A
218	588	MPM 2 L4(REP/OVL)	31.5	.0	0			09D/01C					09D/05A
219	627	MPM 2 L4(ZOO/OVL)	37.0	.0	2							TRL	
220	632	MPM 2 L4(ZOO/CIR)	19.0	.0	0								
221	631	MPM 2 L4(ZOO/CIR)	18.5	.0	0			11A					
222	618	MPM 2 L4(ANT/OVL)	25.0	.0	0			03A			13A	09D	
223	619	MPM 2 L4(ANT/OVL)	29.0	.0	0			01B			13C/09D		
224	640	MPM 2 PE/BIC(REP/CIR)	0.0	23.0	0			01F					
225	639	MPM 2 PE/BIC(REP/CIR)	0.0	20.0	0			09D					
226	641	MPM 2 PE/BIC(REP/CIR)	32.0	.0	2								
227	579	MPM 2 L4(FEL/PDH/SRE)	21.0	.0	2								12A
228	648	MPM 2 AS(FEL/OVL)	29.5	.0	0			08A			06A	(TRL)	01B/06A/13A
229	650	MPM 2 AS(REP/OVL)	29.0	.0	2							LOO	
230	8	SPM 1 L3/CON(GEO)	60.0	.0	3	08A	08A/01F						09D
231	20	SPM 1 L3/CON(EFF)	55.0	.0	3		AVI/SNA/01F						01F

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
232	25	SPM 1 L3/CON(EFF)	64.5	.0	1	08A/01F	08A/01F/ANT						09D
233	22	SPM 1 L3/CON(EFF)	61.0	.0	1	08A	01F/ANT						01F
234	14	SPM 1 L3/CON(EFF)	36.0	.0	1		01F/11A/ALL						01F/11A
235	21	SPM 1 L3/CON(EFF)	57.0	.0	1		01F/ALL						
236	31	SPM 1 L3/CON(EFF)	98.0	.0	0	12A							
237	5	SPM 1 L3/CON(GEO)	35.0	.0	0		10A/01F						01F/09D
238	29	SPM 1 L3/CON(EFF)	72.5	.0	0		08A/01F/ANT						01F
239	30	SPM 1 L3/CON(EFF)	81.5	.0	1		08A/01F/ANT						09D
240	27	SPM 1 L3/CON(EFF)	70.0	.0	0		08A/01F/ANT?						09D/AHD?
241	28	SPM 1 L3/CON(EFF)	70.0	.0	1		08A/01F/ANT						09D
242	78	SPM 1 L3/TRA	33.5	.0	3	09D	09D	09D					09D/11A
243	18	SPM 1 L3/CON(EFF)	52.0	.0	0		ALL						
244	15	SPM 1 L3/CON(EFF)	44.5	.0	1		08A/01F/MON						
245	12	SPM 1 L3/CON(EFF)	34.0	.0	1	10A	10A/MON						09D/05A
246	13	SPM 1 L3/CON(EFF)	35.0	.0	1		ANT						01F
247	19	SPM 1 L3/CON(EFF)	53.0	.0	1		09D/05A/ALL						09D
248	16	SPM 1 L3/CON(EFF)	48.5	.0	1		MON						09D
249	26	SPM 1 L3/CON(EFF)	68.0	.0	1		10A/AVI						09D
250	24	SPM 1 L3/CON(EFF)	62.0	.0	3	08A	08A/10A/ANT		AHD				09D
251	38	SPM 1 L3/TRA(H)	38.0	.0	3	10A/03A	01A	08A/09D	LUG				12A/09D
252	39	SPM 1 L3/TRA(H)	38.0	.0	1	02A/03A	01A	09D	LUG				12A/09D
253	50	SPM 1 L3/TRA(H)	47.0	.0	1	02A	01A(?ANT)	09D	LUG:BIN/AVI				12A/09D
254	34	SPM 1 L3/TRA(H)	34.0	.0	1	02A	09D/05A		LUG:BIN				12A/09D
255	53	SPM 1 L3/TRA(H)	50.0	.0	0	10A	01A	10A/09D/01C	LUG;BIN				12A/10A/20A
256	55	SPM 1 L3/TRA(H)	52.0	.0	0	10A		09D/10A	LUG				12A/09D/20A
257	67	SPM 1 L3/TRA(H)	72.0	.0	0	10A			LUG				12A/09D
258	59	SPM 1 L3/TRA(H)	54.5	.0	0	?10A	01A		LUG				12A/09D
259	58	SPM 1 L3/TRA(H)	54.0	.0	0	02A?	01A	01C/09D	LUG:BIN				12A/09D
260	51	SPM 1 L3/TRA(H)	47.5	.0	0	09D	01A?		LUG:BIN/AVI				12A/09D
261	56	SPM 1 L3/TRA(H)	53.0	.0	0	02A			LUG:EYE				12A/09D
262	64	SPM 1 L3/TRA(H)	64.0	.0	2	10A			LUG:(solid)				12A/09D/05A
263	68	SPM 1 L3/TRA(H)	72.0	.0	0	02A			LUG:BIN				12A/09D/05A
264	72	SPM 1 L3/TRA(K)	40.0	.0	0	09D/06A	09D/05A	10A	LUG:JHD				12A/09D/05A

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
265	103	SPM 2 L3/TRA/OFR(AVI)	76.0	.0	1	09D		10A			01A/01B/09D		12A/09D/05A
266	90	SPM 2 L3/TRA/OFR(AVI)	47.0	.0	0	09D		10A/09D			05A/09D		12A/09D
267	91	SPM 2 L3/TRA/OFR(AVI)	48.0	.0	0	10A	01B	07A			18A		12A/09D
268	102	SPM 2 L3/TRA/OFR(AVI)	72.0	.0	1	10A		11A/10A/09D			09D		12A/01B/09D
269	88	SPM 2 L3/TRA/OFR(AVI)	45.0	.0	0	10A/02A		10A/04A			11A		12A/09D
270	92	SPM 2 L3/TRA/OFR(AVI)	50.0	.0	0	10A		07A/10A/01C			12A/18A		12A/09D/05A
271	100	SPM 2 L3/TRA/OFR(AVI)	70.0	.0	0	01A/10A		10A			18A		12A/09D/05A
272	98	SPM 2 L3/TRA/OFR(AVI)	60.0	.0	0	10A		10A/01C			11A		12A/01A/03A
273	85	SPM 2 L3/TRA/OFR(AVI)	41.0	.0	0	10A		09D			09D		12A/09D/05A
274	135	SPM 2 L3/TRA/OFR(REP)	40.0	.0	0	09D					12A/09D/05A		12A/09D
275	95	SPM 2 L3/TRA/OFR(AVI)	53.5	.0	0	01A/07A		09D			09D/05A		12A/09D
276	140	SPM 2 L3/TRA/OFR(REP)	55.5	.0	0	01A/10A		10A			14A		12A
277	147	SPM 2 L3/TRA/SOL(AVI)	48.0	.0	0	02A	01A						
278	119	SPM 2 L3/TRA/OFR(FEL)	50.0	.0	0	01A/11A/10A		08A			01A/05A		12A
279	132	SPM 2 L3/TRA/OFR(BOX)	57.0	.0	0	10A		10A			12A/09D		12A/09D/05A
280	134	SPM 2 L3/TRA/OFR(BOX)	77.0	.0	0	09D		09D/09C			12A/09D/05A		12A/10A/15A
281	122	SPM 2 L3/TRA/OFR(FEL)	80.0	.0	0	07A		07A			12A/05A		12A/05A/09D
282	120	SPM 2 L3/TRA/OFR(FEL)	69.0	.0	0	02A/10A	01A	10A/09D			12A/05A		12A/10A/09D
283	142	SPM 2 L3/TRA/OFR(REP)	82.0	.0	0	?		10A			12A		12A/09D/01C
284	118	SPM 2 L3/TRA/OFR(CAN)	105.0	.0	0	09D		07A			12A/19A/LIZ		12A/09D/05A
285	191	MPM 1 L3(SRE)	37.0	.0	3			17A					
286	136	SPM 2 L3/TRA/OFR(REP)	47.0	.0	1	10A		10A			12A/10A/05A		12A/15B/05A
287	628	MPM 2 L4(ZOO/OVL)	40.0	.0	3			17A				TRL	12A/10A/13C
288	107	SPM 2 L3/TRA/OFR(CAN)	66.0	.0	1	07A		07A			12A		12A/01B/06B
289	117	SPM 2 L3/TRA/OFR(CAN)	103.0	.0	0	?		10A			12A		12A/05A/08A
290	137	SPM 2 L3/TRA/OFR(REP)	50.0	.0	0	?		07A			12A/06B		12A/08A/05A
291	106	SPM 2 L3/TRA/OFR(CAN)	45.0	.0	0	?		07A			12A/09D		12A/09D
292	121	SPM 2 L3/TRA/OFR(FEL)	75.0	.0	0	09D		10A?			12A/09D		12A/09D
293	178	SPM 2 L3/FSL(FEL)	80.0	.0	1								12A
294	177	SPM 2 L3/FSL(FEL)	75.0	.0	0								12A
295	176	SPM 2 L3/FSL(FEL)	72.0	.0	0								12A
296	172	SPM 2 L3/FSL(CAN)	84.5	.0	0								12A
297	173	SPM 2 L3/FSL(CAN)	85.0	.0	0								12A

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
298	143	SPM 2 L3/TRA/OFR(REP)	82.0	.0	0								12A
299	179	SPM 2 L3/FSL(REP)	61.0	.0	0	10A					MON		12A
300	160	SPM 2 L3/ANG(REP)	55.0	.0	1			10A			12A/05A		
301	161	SPM 2 L3/ANG(REP)	55.0	.0	0						12A/05A		
302	156	SPM 2 L3/ANG(REP)	50.0	.0	0						12A		
303	155	SPM 2 L3/ANG(REP)	48.0	.0	2						12A/05A		
304	157	SPM 2 L3/ANG(REP)	52.0	.0	2						05A		
305	150	SPM 2 L3/TRA/SOL(FEL)	52.0	.0	1						09D/11A		
306	217	MPM 1 L3(REC/NRI)	39.0	.0	0			17A					
307	214	MPM 1 L3(CIR)	0.0	39.0	3			17A					
308	232	MPM 1 L3(MAR/CIR)	0.0	40.0	0		APP	17A					
309	189	MPM 1 L3(REC)	37.0	.0	2			17A					
310	188	MPM 1 L3(REC)	34.0	.0	2			17A					
311	197	MPM 1 L3(OVL)	24.0	.0	2			17A					
312	199	MPM 1 L3(OVL)	30.0	.0	3			17A					
313	193	MPM 1 L3(SRE)	50.0	.0	3			17A					
314	192	MPM 1 L3(SRE)	45.0	.0	3			17A					
315	195	MPM 1 L3(SRE)	75.0	.0	2			17A					
316	196	MPM 1 L3(SRE)	75.0	.0	0			17A					
317	227	MPM 1 L3(MAR/SRE)	58.5	.0	0		APP	17A					
318	226	MPM 1 L3(MAR/SRE)	45.0	.0	0		APP	17A<					
319	222	MPM 1 L3(MAR/REC)	74.0	.0	0		APP	AHD<					01B
320	220	MPM 1 L3(MAR/REC)	60.0	.0	0		APP	17A/AHD					01B
321	221	MPM 1 L3(MAR/REC)	60.0	.0	0		APP						
322	282	MPM 1 L3/EFF(SRE)	33.5	.0	0		APP	17A					AHD
323	268	MPM 1 L3(FP+/SRE)*	77.0	.0	1		FP	TRO		ANT/AVI			
324	275	MPM 1 L3(FP+/SRE)	119.0	.0	2		FP	17A		ANT/MON			APP/AVI
325	274	MPM 1 L3(FP+/SRE)	95.0	.0	0		FP	17A		ANT/JAG(?)			APP/AVI/TRO
326	261	MPM 1 L3(FP+/SRE)	48.0	.0	0		FP	17A		ANT			APP/AVI/TRO
327	265	MPM 1 L3(FP+/SRE)	65.5	.0	0		FP	17A		HAH			APP/AVI
328	264	MPM 1 L3(FP+/SRE)	56.0	.0	0		FP			HAH			APP/AVI/TRO
329	259	MPM 1 L3(FP+/SRE)	45.0	.0	0		FP	17A		AVI			APP/AVI/TRO
330	267	MPM 1 L3(FP+/SRE)	74.0	.0	2		FP	17A		AVI			APP/AVI

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
331	256	MPM 1 L3(FP+/REC)	90.0	.0	0		FP	17A		AVI			APP/AVI
332	270	MPM 1 L3(FP+/SRE)	80.0	.0	0		FP	17A		AVI			APP/AVI
333	253	MPM 1 L3(FP+/REC)	72.5	.0	0		FP	17A		AVI			APP/AVI
334	271	MPM 1 L3(FP+/SRE)	82.0	.0	2		FP	17A		HAH/ALL/JAG			APP/AVI/TRO
335	250	MPM 1 L3(FP+/REC)	58.5	.0	0		FP	TRO		HAH/ALL			APP/AVI/TRO
336	266	MPM 1 L3(FP+/SRE)	73.0	.0	2		FP	TRO	AVI	ANT			AVI/ANT
337	272	MPM 1 L3(FP+/SRE)	83.0	.0	0		FP	17A		JAG/ANT/CRA			AVI/ALL/TRO
338	269	MPM 1 L3(FP+/SRE)	77.0	.0	2		FP	17A		HAH/ALL/SNA			MON/JAG/TRO
339	279	MPM 1 L3(PRO/SRE)	80.0	.0	2		APP/AVI		(AVI)				
340	239	MPM 1 L3(FP/SRE)*	85.0	.0	2		FP	17A		GRID			
341	238	MPM 1 L3(FP/SRE)	80.0	.0	2		FP	17A		AVI			
342	235	MPM 1 L3(FP/SRE)	75.0	.0	2		FP			REP			
343	236	MPM 1 L3(FP/SRE)	75.0	.0	1		FP	17A		ANT			
344	276	MPM 1 L3(FP+/OVL)	79.0	.0	0		FP	17A		AVI			APP/AVI
345	307	MPM 1 L4(SUR/OVL)*	110.0	.0	1			TRO	SUR/AHD				
346	292	MPM 1 L4(NRI)*	41.0	.0	3	01F							
347	286	MPM 1 L4(SRE)*	30.0	.0	3			01B/SNA					
348	324	MPM 1 L4/HS(OVL)*	219.0	.0	2			TRO					TRO(ANT)
349	308	MPM 1 L4(SUR/OVL)*	112.0	.0	1			TRO	SUR/AHD?				
350	326	MPM 1 L4/HS(SUR/OVL)	34.5	.0	0			TRO					(ANT)
351	332	MPM 1 L4/AS(SUR/OVL)	39.0	.0	3			01F/11A/17A					(SIM)
352	330	MPM 1 L4/AS(SUR/OVL)	34.5	.0	0			11A/17A	ANT				(SIM)
353	303	MPM 1 L4(SUR/OVL)	37.0	.0	0			01F/11A/TRO	SUR/16A/AVI				
354	300	MPM 1 L4(SUR/OVL)	32.5	.0	3			17A/01F/11A	SUR/16A				
355	293	MPM 1 L4(SUR/OVL)	26.0	.0	3			17A/01F/11A	SUR/16A				
356	327	MPM 1 L4/HS(SUR/OVL)	38.0	.0	3			17A/01F/11A					(ANT)
357	314	MPM 1 L4(PAN/OVL)*	25.0	.0	3			08A					
358	312	MPM 1 L4(SUR/PAN/OVL)	35.0	.0	3			17A/01F/11A	SUR/16A				SIM
359	309	MPM 1 L4(SUR/PAN/OVL)	26.0	.0	3			17A/01F/11A	SUR/16A				SIM
360	313	MPM 1 L4(SUR/PAN/OVL)	38.5	.0	3			17A/01F/11A	SUR/16A				SIM
361	311	MPM 1 L4(SUR/PAN/OVL)	33.5	.0	3			17A/01F/11A	SUR/16A				SIM
362	291	MPM 1 L4(CIR)*	0.0	28.0	1			TRO					TRO
363	287	MPM 1 L4(OVL)	32.0	.0	3			TRO/01F					

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
364	341	MPM 1 PE/FLS	0.0	22.0	0			06B/19A/JHD					12A
365	345	MPM 1 PE/FLS	0.0	26.0	1			08A/JHD					12A
366	339	MPM 1 PE/FLS	0.0	21.0	1			ZHD					12A
367	359	MPM 1 PE/FLL*	0.0	57.0	3			AHD					
368	163	SPM 2 L3/ANG(REP)	61.0	.0	0						12A/05A		
369	353	MPM 1 PE/FLS	0.0	57.0	3			JHD					12A
370	357	MPM 1 PE/FLL	0.0	31.5	0			AHD					12A
371	352	MPM 1 PE/FLS	0.0	51.0	3			JHD					12A
372	354	MPM 1 PE/FLS	0.0	75.0	3			08A/JAG					12A
373	570	MPM 2 L4(FEL/PAN/SRE)	84.0					01F/11A				TRL	MON
374	409	MPM 1 ATL/RB(CIR)	0.0	45.0	3			19A/06B					(SIM)
375	399	MPM 1 ATL/RB(CIR)	0.0	24.0	1			08A					(SIM)
376	408	MPM 1 ATL/RB(CIR)	0.0	41.0	0			08A					(HAH)
377	395	MPM 1 ATL/RB(CIR)	0.0	21.0	3								(HAH)
378	400	MPM 1 ATL/RB(CIR)	0.0	24.0	1								(HAH)
379	406	MPM 1 ATL/RB(CIR)	0.0	36.0	0			08A					(HAH)
380	378	MPM 1 FS/RB(CIR)	0.0	22.0	0			08A					08A(FEL+ANT)
381	407	MPM 1 ATL/RB(CIR)	0.0	39.0	1			08A					(SIM)
382	380	MPM 1 FS/RB(CIR)*	0.0	23.0	0			TRO					06B(FEL/ANT)
383	384	MPM 1 ATL(CIR)	0.0	14.0	0								(ANT)
384	387	MPM 1 ATL(CIR)	0.0	15.5	3			01F/01B					(ANT)
385	385	MPM 1 ATL(CIR)	0.0	14.5	3			06B/03A					(HAH)
386	390	MPM 1 ATL(CIR)	0.0	21.0	0								(SIM)
387	391	MPM 1 ATL(CIR)	0.0	27.5	0			07A					(FEL)
388	389	MPM 1 ATL(CIR)	0.0	20.0	0			03A/01F					06B(ANT)
389	368	MPM 1 FS(REC)	15.0	.0	3			19A/07A					(FEL)
390	367	MPM 1 FS(REC)	14.0	.0	3								(FEL)19A/13C
391	369	MPM 1 FS(REC)	20.5	.0	3								(FEL)
392	466	MPM 2 L4(FEL/SRE)	90.0	.0	0			01F/11A/17A			NAT	TLL	
393	633	MPM 2 L4(ZOO/DH/OVL)	40.0	.0	3								
394	528	MPM 2 L4(FEL/OVL)	68.5	.0	0			08A			13A	TRL/09D	
395	599	MPM 2 L4(REP/OVL)	187.0	.0	3			19A/JAG			06A		13D
396	546	MPM 2 L4(FEL/CIR)	59.5	.0	3			01F/TRO			09D/05A/01B	TLL/01B/01D	01F/01B

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
397	594	MPM 2 L4(REP/OVL)	65.0	.0	0			01F/TRO				TLL	09D
398	488	MPM 2 L4(FEL/OVL)	35.0	.0	1			01F/03A			06B		06B
399	507	MPM 2 L4(FEL/OVL)	47.0	.0	0			08A				TRL/14A	
400	526	MPM 2 L4(FEL/OVL)	67.0	.0	0			19A/13C			13A/01B	TRL/13B	
401	529	MPM 2 L4(FEL/OVL)	72.0	.0	0			08A				TRL/06B	06B
402	532	MPM 2 L4(FEL/OVL)	83.0	.0	0			09D			01B/09D	TRL	06B
403	519	MPM 2 L4(FEL/OVL)	61.0	.0	1			01F			09D/06B	TRL/06B	06B/09D
404	535	MPM 2 L4(FEL/OVL)	87.0	.0	1			09D/01F			09D	06B	06B
405	597	MPM 2 L4(REP/OVL)	115.0	.0	1			01B				TLL	
406	545	MPM 2 L4(FEL/CIR)	46.0	.0	3			07A			06B	19A/09D/TRL	13C
407	512	MPM 2 L4(FEL/OVL)	48.0	.0	0						06B	06B/TRL	06B/19A
408	522	MPM 2 L4(FEL/OVL)	62.0	.0	0			19A/13A				TRL	
409	571	MPM 2 L4(FEL/PAN/OVL)	64.0	.0	3			01F/11A/17A				TLL	AHD
410	584	MPM 2 L4(FEL/LOO/OVL)	47.0	.0	3			19A/05A			06B	BIF/06B	
411	617	MPM 2 L4(REP/LDH/OVL)	25.0	.0	3						03A		
412	610	MPM 2 L4(REP/LDH/REC)	41.0	.0	0			17A					15B
413	609	MPM 2 L4(REP/LDH/REC)	34.5	.0	0			07A					06B
414	498	MPM 2 L4(FEL/OVL)	40.5	.0	0			19A					05A
415	607	MPM 2 L4(REP/PDH/NRI)	55.0	.0	0						09D		09D/05A/MON
416	604	MPM 2 L4(REP/DH/NRI)	51.5	.0	3			09D			06B/03A		13D
417	565	MPM 2 L4(FEL/DH/NRI)	60.0	.0	3			01F/03A			13C/06B		
418	564	MPM 2 L4(FEL/DH/NRI)	46.5	.0	0			19A					
419	562	MPM 2 L4(FEL/DH/CIR)	22.0	.0	3			01F/03A			13C/06B		
420	563	MPM 2 L4(FEL/DH/CIR)	23.0	.0	3			01F/03A			06B		06B
421	600	MPM 2 L4(REP/DH/OVL)	25.0	.0	3			01D					
422	591	MPM 2 L4(REP/OVL)	42.5	.0	0							TRL	
423	438	MPM 2 L4(FEL/REC)	50.0	.0	0			10A			06B	06B/TRL	
424	435	MPM 2 L4(FEL/REC)	45.0	.0	0			03A					06B
425	411	MPM 2 L4(FEL/REC)	18.5	.0	3							TRL	
426	413	MPM 2 L4(FEL/REC)	23.5	.0	3							TLL/06B	
427	414	MPM 2 L4(FEL/REC)	25.0	.0	0			06B			03A/09D/05A		06B
428	437	MPM 2 L4(FEL/REC)	48.0	.0	0			08A			13A/06B	14A/TRL	
429	431	MPM 2 L4(FEL/REC)	41.0	.0	0			08A			06B	14A	06B

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
430	440	MPM 2 L4(FEL/REC)	60.0	.0	3			01F/03A			13A/09D/03A	06B/TRL	06B
431	436	MPM 2 L4(FEL/REC)	45.0	.0	0			06A			01B	01B/13D/TLL	06A
432	578	MPM 2 L4(FEL/PAN/NRI)	63.0	.0	0	13C/15B		09D				06B/TRL	13A/06B/MON
433	576	MPM 2 L4(FEL/PAN/NRI)	27.0	.0	3						13A/03A		06A/MON/ZOO
434	606	MPM 2 L4(REP/PAN/NRI)	37.5	.0	3			09C			06B	05A/09D/TLL	01C/05A/ANT
435	577	MPM 2 L4(FEL/PAN/NRI)	56.0	.0	2			08A/03A			01B/09D	01B/06B/JHD	06B/MON
436	552	MPM 2 L4(FEL/NRI)	55.0	.0	3			01B/17A					13D/01F
437	554	MPM 2 L4(FEL/NRI)	64.0	.0	3			AHD/11A				TRL	
438	550	MPM 2 L4(FEL/NRI)	50.0	.0	0			08A			06B	TRL	06B
439	551	MPM 2 L4(FEL/NRI)	50.0	.0	0			01F/03A			09D/03A/13A	06B	08A/01F/06B
440	553	MPM 2 L4(FEL/NRI)	62.0	.0	0			01F/03A			13A/06B	06B/TRL	
441	592	MPM 2 L4(REP/OVL)	43.0	.0	3			08A			06B	14A/TRL	
442	593	MPM 2 L4(REP/OVL)	50.0	.0	0			08A			09D	06B/14A/TRL	
443	586	MPM 2 L4(REP/SRE)*	40.0	.0	0		APP?	17A					11A
444	566	MPM 2 L4(FEL/PAN/REC)	36.0	.0	0			03A				06A/TRL	06B/JAG
445	567	MPM 2 L4(FEL/PAN/REC)	41.0	.0	3			01B				TRL	MON
446	457	MPM 2 L4(FEL/SRE)	52.0	.0	0			01F/11A/17A				TRL	
447	491	MPM 2 L4(FEL/OVL)	36.5	.0	3			19A/09D			06B	01B/13C	
448	575	MPM 2 L4(FEL/PAN/CIR)	35.0	.0	0			01B			06B	06B/TRL	13A/JAG
449	572	MPM 2 L4(FEL/PAN/CIR)	27.0	.0	0			08A			06B	06B/TRL	06B/MON
450	573	MPM 2 L4(FEL/PAN/CIR)	32.0	.0	3			01F/01B			06B/01B	06B/TRL	06B/MON
451	574	MPM 2 L4(FEL/PAN/CIR)	32.0	.0	3			01F/03A			06B/01F	01F/06B/TRL	MON
452	489	MPM 2 L4(FEL/OVL)	35.5	.0	3			01B				14A/TRL	03A
453	530	MPM 2 L4(FEL/OVL)	73.5	.0	0			01F/19A			13C	TLL	
454	449	MPM 2 L4(FEL/SRE)	41.5	.0	1			08A				TRL	06B
455	518	MPM 2 L4(FEL/OVL)	60.0	.0	0			10A/19A			13A	TRL	
456	596	MPM 2 L4(REP/OVL)	80.0	.0	0			13A/09D			03A	13A/14A/TRL	15B
457	479	MPM 2 L4(FEL/OVL)	30.0	.0	0			10A				14A/TRL	
458	515	MPM 2 L4(FEL/OVL)	50.0	.0	0			01F			09D	06B/TRL	06B
459	513	MPM 2 L4(FEL/OVL)	49.5	.0	0			08A/14A			06B/01B	01B/06B/TRL	06B
460	587	MPM 2 L4(REP/OVL)	28.0	.0	3			01F/13C			13C	13C/19A/TRL	
461	543	MPM 2 L4(FEL/CIR)	37.0	.0	3			08A			06B/01B	06B/19A/TRL	
462	494	MPM 2 L4(FEL/OVL)	38.0	.0	3			08A			08A/19A	13A/01B	05A/09D

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
463	540	MPM 2 L4(FEL/CIR)	28.5	.0	3			01F/01B			06B	06B/TRL	06B
464	538	MPM 2 L4(FEL/CIR)	24.0	.0	3			01F/01B				06B/TLL	06B
465	542	MPM 2 L4(FEL/CIR)	32.5	.0	3			01F/01B			06B	08A/TRL	06B
466	541	MPM 2 L4(FEL/CIR)	31.0	.0	3			01F				TRL	
467	539	MPM 2 L4(FEL/CIR)	25.0	.0	3								
468	467	MPM 2 L4(FEL/OVL)	15.0	.0	0			06B/03A				06B/TLL	06B
469	520	MPM 2 L4(FEL/OVL)	61.0	.0	3			08A			01B/13C	TRL	
470	460	MPM 2 L4(FEL/SRE)	57.0	.0	0			08A				06B/TRL	06B
471	455	MPM 2 L4(FEL/SRE)	47.5	.0	0			01B			11A/01F	06B/TRL	
472	636	MPM 2 PE/BIC(REP/CIR)	0.0	.0	0			01B					
473	637	MPM 2 PE/BIC(REP/CIR)	0.0	.0	0			09D					10A
474	638	MPM 2 PE/BIC(REP/CIR)	0.0	.0	0								
475	651	MPM 2 AS(REP/OVL)	35.0	.0	0			09D				TRL	
476	647	MPM 2 AS(AVI/OVL)*	33.0	.0	0							06B/TLL	
477	649	MPM 2 AS(REP/OVL)	27.0	.0	0						01B	01B	
478	158	SPM 2 L3/ANG(REP)	53.5	.0	0						12A/O5A		
479	6	SPM 1 L3/CON(GEO)	35.5	.0	2		09A						
480	17	SPM 1 L3/CON(EFF)	49.5	.0	0	10A	09D/ZOO						09D/05A
481	61	SPM 1 L3/TRA(H)	56.5	.0	0	01A/10A	01A		LUG:BIN				12A/09D
482	175	SPM 2 L3/FSL(FEL)*	41.5	.0	0				LUG:JHD				12A
483	45	SPM 1 L3/TRA(H)	42.0	.0	0	09D			LUG:BIN				12A/09D/05A
484	57	SPM 1 L3/TRA(H)	53.0	.0	0	02A	01A		LUG:BIN				12A/09D
485	60	SPM 1 L3/TRA(H)	55.0	.0	0	02A/10A			LUG:BIN				12A/09D
486	47	SPM 1 L3/TRA(H)	44.0	.0	0	10A			LUG:BIN				12A/09D
487	63	SPM 1 L3/TRA(H)	63.5	.0	2	02A	01A		LUG:BIN				12A/09D
488	76	SPM 1 L3/TRA(K)	60.0	.0	2	02A	02A		LUG				12A/09D
489	80	SPM 1 L4/TRA(H)*	28.0	.0	0	03A		03A	LUG:EYE				12A/09D/05A
490	115	SPM 2 L3/TRA/OFR(CAN)	95.0	.0	0	02A		10A			12A/01B/06B		12A/10A/20A
491	114	SPM 2 L3/TRA/OFR(CAN)	94.0	.0	0	08A		07A			12A/01C		12A/08A/09D
492	109	SPM 2 L3/TRA/OFR(CAN)	75.0	.0	0	07A		07A			12A/13A		12A/09D/17A
493	144	SPM 2 L3/TRA/OFR(REP)	87.0	.0	0	08A		07A			12A/01B		12A/08A/09D
494	112	SPM 2 L3/TRA/OFR(CAN)	90.0	.0	0	10A/01B		07A			12A/13A/06B		12A/20A/11A
495	419	MPM 2 L4(FEL/REC)	30.0	.0	0			07A			?O6B	?06B/TRL	06B

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
496	139	SPM 2 L3/TRA/OFR(REP)	55.0	.0	0	01B		10A			12A/05A/SNA		12A/20A/09D
497	111	SPM 2 L3/TRA/OFR(CAN)	89.5	.0	0	01B		08A			12A/01C/06B		12A/20A/08A
498	110	SPM 2 L3/TRA/OFR(CAN)	83.5	.0	0	07A		07A			12A/01C/11A		12A/08A/20A
499	113	SPM 2 L3/TRA/OFR(CAN)	92.5	.0	0	07A					12A/01C/04A		12A/08A/09D
500	108	SPM 2 L3/TRA/OFR(CAN)	74.0	.0	0	10A		07A			12A/05A/09D		12A/07A/10A
501	123	SPM 2 L3/TRA/OFR(FEL)	80.0	.0	0	10A	10A	10A			15B/01B/09D		12A/08A/09D
502	186	SPM 2 L4/TRA/OFR(BOX)	85.0	.0	0	02A/10A/09A	02A	01B/09A/19A			STY/19A/09C		12A/20A/19A
503	125	SPM 2 L3/TRA/OFR(FEL)	84.0	.0	0	10A	01A	10A/09A/01B			HAH/20A/05A		12A/07A/20A
504	124	SPM 2 L3/TRA/OFR(FEL)	83.0	.0	0	07A		07A			08A/19A		12A/01B/10A
505	127	SPM 2 L3/TRA/OFR(BOX)	44.0	.0	0	10A		09D			09D		12A/05A/09D
506	141	SPM 2 L3/TRA/OFR(REP)	60.0	.0	1	02A		10A			05A		12A/09D/20A
507	126	SPM 2 L3/TRA/OFR(BOX)	39.0	.0	0			09D			19A/15B		12A/09D/05A
508	182	SPM 2 L3/FSL(REP)	111.0	.0	0	03A							12A
509	146	SPM 2 L3/TRA/OFR(ZOO)	42.0	.0	0	09D							12A
510	152	SPM 2 L3/TRA/SOL(REP)	65.0	.0	0								
511	104	SPM 2 L3/TRA/OFR(AVI)	82.0	.0	0	10A	19A/01B/20A	07A			CRO		12A/09D/20A
512	96	SPM 2 L3/TRA/OFR(AVI)	56.0	.0	0	02A	01A	09D/04A/01C			09C		12A/09D/20A
513	101	SPM 2 L3/TRA/OFR(AVI)	70.0	.0	0						09C/06B		
514	148	SPM 2 L3/TRA/SOL(AVI)	60.0	.0	3								
515	93	SPM 2 L3/TRA/OFR(AVI)	51.0	.0	0	09D		10A					12A/01C/09D
516	166	SPM 2 L3/ANG(REP)	72.0	.0	0			10A			12A/05A		
517	167	SPM 2 L3/ANG(REP)	78.5	.0	0						12A/05A		
518	170	SPM 2 L3/ANG(REP)	107.0	.0	0						12A/05A		
519	164	SPM 2 L3/ANG(REP)	70.0	.0	0						12A/09D		
520	202	MPM 1 L3(OVL)	33.0	.0	3			17A					
521	212	MPM 1 L3(CIR)	0.0	35.0	3			17A					
522	206	MPM 1 L3(OVL)	62.5	.0	1			17A					
523	284	MPM 1 L3/EFF(SRE)	36.5	.0	3			17A					AHD
524	240	MPM 1 L3(FP/SRE)	87.0	.0	1		FP	17A		SIM			
525	241	MPM 1 L3(FP/SRE)	87.0	.0	1		FP	17A		ANT			
526	243	MPM 1 L3(FP/SRE)	90.0	.0	1		FP	17A		ANT			
527	245	MPM 1 L3(FP/SRE)	93.0	.0	1		FP	17A		ZOO			
528	246	MPM 1 L3(FP/SRE)	96.0	.0	0		FP	17A		ANT			

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
529	234	MPM 1 L3(FP/SRE)	64.0	.0	0		FP			AVI			
530	242	MPM 1 L3(FP/SRE)	87.0	.0	1		FP	17A		AVI			
531	244	MPM 1 L3(FP/SRE)	91.5	.0	0		FP	17A		ZOO			
532	223	MPM 1 L3(MAR/REC)	94.0	.0	1		MAR	17A	17A?				
533	258	MPM 1 L3(FP+/SRE)*	42.0	.0	2		FP	17A		MON			APP:AVI
534	254	MPM 1 L3(FP+/REC)	75.0	.0	0		FP	17A		HAH			APP:AVI/09D
535	249	MPM 1 L3(FP+/REC)	53.0	.0	0		FP	17A		HAH/JAG			APP:AVI/ANT
536	248	MPM 1 L3(FP+/REC)	48.0	.0	0		FP	17A		ANT			APP:AVI
537	255	MPM 1 L3(FP+/REC)	79.0	.0	0		FP	17A		HAH			APP:AVI
538	273	MPM 1 L3(FP+/SRE)	90.0	.0	0		FP	17A		ALL/HAH/JAG			APP:AVI/ANT
539	252	MPM 1 L3(FP+/REC)	72.0	.0	2		FP	AHD		HAH			APP:ANT/AVI
540	260	MPM 1 L3(FP+/SRE)*	47.0	.0	0		FP	17A		HAH/SNA			APP:TRO
541	277	MPM 1 L3(FP+/OVL)	80.0	.0	0		FP	17A		AVI			APP:AVI
542	224	MPM 1 L3(MAR/REC)	140.5	.0	0		MAR	17A					
543	278	MPM 1 L3(PRO/SRE)	46.5	.0	3		AVI/LIZ		(AVI/LIZ)				
544	257	MPM 1 L3(FP+/SRE)	37.0	.0	0		FP	17A/01F		JAG			APP:HAH
545	183	SPM 2 L4/TRA/OFR(AVI)	34.0	.0	3	10A		01B			NAT		12A/11A/AHD
546	288	MPM 1 L4(OVL)	40.0	.0	0			JHD					
547	306	MPM 1 L4(SUR/OVL)*	98.0	.0	0			AHD	SUR/AVI				
548	301	MPM 1 L4(SUR/OVL)	33.0	.0	3			17A	SUR/AVI				
549	319	MPM 1 L4/HS(OVL)	34.0	.0	1			17A					(ANT)
550	322	MPM 1 L4/HS(OVL)	49.0	.0	1			AHD					(ANT)
551	349	MPM 1 PE/FLS	0.0	30.0	0			08A/JHD					12A
552	347	MPM 1 PE/FLS	0.0	27.0	0			09D/JHD					12A
553	346	MPM 1 PE/FLS	0.0	26.0	0			09D/JHD					12A
554	364	MPM 1 PE/DRU	0.0	18.0	2			JHD					
555	365	MPM 1 PE/DRU	0.0	20.0	2			01F/JHD					
556	401	MPM 1 ATL/RB(CIR)	0.0	24.0	2								(ANT)
557	403	MPM 1 ATL/RB(CIR)	0.0	26.0	0			08A					(ANT)
558	404	MPM 1 ATL/RB(CIR)	0.0	26.0	0			08A					(HAH)
559	402	MPM 1 ATL/RB(CIR)	0.0	25.0	0			03A					(ANT)
560	405	MPM 1 ATL/RB(CIR)	0.0	31.5	0								(SIM)
561	328	MPM 1 L4/AS(OVL)	40.0	.0	0			11A/17A					(SIM)

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
562	370	MPM 1 FS(REC)	29.0	.0	0			08A					(FRO)
563	317	MPM 1 L4/HS(OVL)*	24.0	.0	0			03A/TRO					(ANT)
564	383	MPM 1 ATL(CIR)	0.0	12.5	0								(ANT)
565	644	MPM 2 FS/AVI(CIR)	114.0	.0	2						AVI		SNA/06A/HAH
566	645	MPM 2 FS/SIM(CIR)	111.0	.0	0						MON		13C
567	643	MPM 2 FS/AVI(CIR)	110.0	.0	0						AVI		
568	646	MPM 2 FS/SIM(CIR)	115.0	.0	0						MON/15B		
569	595	MPM 2 L4(REP/OVL)	76.0	.0	0								
570	642	MPM 2 PE/BIC(REP/CIR)	33.0	.0	0			09D					06B
571	524	MPM 2 L4(FEL/OVL)	64.5	.0	0			08A			01C	TRL	
572	48	SPM 1 L3/TRA(H)	44.0	.0	0	10A	01A		LUG:BIN				12A/09D
573	630	MPM 2 L4(ZOO/OVL)	43.0	.0	0			01F					
574	621	MPM 2 L4(ZOO/SRE)	29.0	.0	0			03A					
575	81	SPM 2 L3/CON(AVI)	29.0	.0	1								
576	495	MPM 2 L4(FEL/OVL)	38.0	.0	0			08A			01C	TRL/14A/13A	
577	525	MPM 2 L4(FEL/OVL)	66.0	.0	0			03A			06B	TRL/06B	
578	508	MPM 2 L4(FEL/OVL)	47.0	.0	0			10A			06B	TRL/06B/08A	
579	452	MPM 2 L4(FEL/SRE)	45.0	.0	0			09D			06B	TLL/06B	06B
580	415	MPM 2 L4(FEL/REC)	27.0	.0	0			06B			06B	TRL/06B	06B
581	439	MPM 2 L4(FEL/REC)	51.0	.0	0			08A			09D	TLL/06B/13B	
582	430	MPM 2 L4(FEL/REC)	40.0	.0	0			10A			05A	TLL/05A	
583	555	MPM 2 L4(FEL/DH/REC)	38.0	.0	0			08A			19A/09D/11A		
584	556	MPM 2 L4(FEL/DH/REC)	51.0	.0	0			19A			19A/09D/11A		
585	559	MPM 2 L4(FEL/DH/OVL)	48.0	.0	0			11A/17A					
586	602	MPM 2 L4(REP/DH/NRI)	23.0	.0	0								
587	581	MPM 2 L4(FEL/PDH/NRI)	50.0	.0	0			09D(17A)					09D/05A
588	499	MPM 2 L4(FEL/OVL)	40.5	.0	0			08A			06B	TRL/06B	06B
589	533	MPM 2 L4(FEL/OVL)	85.0	.0	0			06B				TLL	
590	558	MPM 2 L4(FEL/DH/OVL)	44.0	.0	1			03A/09D					09D/06B
591	474	MPM 2 L4(FEL/OVL)	25.5	.0	2			08A			04A	TRL/06B	09D
592	417	MPM 2 L4(FEL/REC)	29.0	.0	1			08A			06B	TRL/06B	06B
593	424	MPM 2 L4(FEL/REC)	32.0	.0	0			08A			08A	TLL/08A	06B
594	585	MPM 2 L4(REP/REC)	40.0	.0	3			07A				TRL	

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
595	502	MPM 2 L4(FEL/OVL)	43.0	.0	1			03A			03A	TLL/03A	
596	428	MPM 2 L4(FEL/REC)	37.0	.0	0			09D			04A	TRL/06B	09D
597	521	MPM 2 L4(FEL/OVL)	61.0	.0	0			09C				TRL/06B	06B
598	548	MPM 2 L4(FEL/NRI)	35.5	.0	0			17A				TLL	
599	432	MPM 2 L4(FEL/REC)	41.0	.0	0			08A				TRL/14A	
600	560	MPM 2 L4(FEL/DH/OVL)	52.0	.0	0			13A/01F			13A/09D		
601	605	MPM 2 L4(REP/PAN/OVL)	45.5	.0	0			AHD					MON/13B
602	433	MPM 2 L4(FEL/REC)	41.0	.0	0			01F/01D			06B	TRL/06B	06B
603	536	MPM 2 L4(FEL/OVL)	93.0	.0	0			01F			09D	TRL/06B	06B
604	527	MPM 2 L4(FEL/OVL)	67.5	.0	0			01F			06B	TRL	06B
605	523	MPM 2 L4(FEL/OVL)	63.5	.0	0			08A			19A	TLL/06B	06B
606	456	MPM 2 L4(FEL/SRE)	48.0	.0	0			07A			09D	TLL/14A	
607	149	SPM 2 L3/TRA/SOL(FEL)	50.0	.0	1								
608	154	SPM 2 L3/ANG(REP)	47.0	.0	0								
609	82	SPM 2 L3/CON(FEL)	43.0	.0	0								
610	151	SPM 2 L3/TRA/SOL(FEL)	54.5	.0	1								
611	35	SPM 1 L3/TRA(H)	36.5	.0	0	10A		03A	LUG:EYE				12A/09D/05A
612	69	SPM 1 L3/TRA(K)	32.5	.0	0	06B			LUG				12A/06B
613	40	SPM 1 L3/TRA(H)*	38.0	.0	0	08A/09D		07A	ODD				12A/20A/09D
614	496	MPM 2 L4(FEL/OVL)	39.5	.0	0			01F			06B	TLL	
615	568	MPM 2 L4(FEL/PAN/SRE)	38.0	.0	0			01F/03A/17A			13C	TLL	09D
616	169	SPM 2 L3/ANG(REP)	94.0	.0	0						12A/04A		
617	601	MPM 2 L4(REP/DH/OVL)	40.0	.0	0						12A		
618	629	MPM 2 L4(ZOO/OVL)	40.0	.0	0			17A					
619	501	MPM 2 L4(FEL/OVL)	42.0	.0	0			06B			06B	TRL	06B
620	626	MPM 2 L4(ZOO/OVL)	28.0	.0	0								
621	423	MPM 2 L4(FEL/REC)	31.0	.0	0			08A			06B	TRL	06B
622	174	SPM 2 L3/FSL(CAN)	96.5	.0	0								12A
623	181	SPM 2 L3/FSL(REP)	84.0	.0	0								12A
624	263	MPM 1 L3(FP+/SRE)*	53.5	.0	0			17A		AVI			
625	201	MPM 1 L3(OVL)	31.0	.0	0			17A					
626	233	MPM 1 L3(FP/REC)*	65.0	.0	0			17A		AVI			
627	451	MPM 2 L4(FEL/SRE)	44.0	.0	0			01F/13C			13C	TRL	13C

ID	Page	Metate variety	L:	D:	P:	GRT above	GRT below	Rim	Appendage	Flying-panel	Head	Tail	Base
628	79	SPM 1 L3/ANG	38.0	.0	3			07A					
629	325	MPM 1 L4/HS(SUR/OVL)	28.0	.0	0			17A					(ANT)
630	247	MPM 1 L3(FP+/REC)	38.5					17A		HAH			APP:AVI/ANT
631	394	MPM 1 ATL/RB(CIR)		20.5	0			10A					(HAH)
632	162	SPM 2 L3/ANG(REP)	59.0	.0	0						12A/05A		
633	611	MPM 2 L4(REP/LDH/REC)	65.0	.0	0			17A					09D
634	537	MPM 2 L4(FEL/CIR)	21.0	.0	0			03A					
635	516	MPM 2 L4(FEL/OVL)	52.0	.0	0			01F/O8A			06B	?06B/TLL	13B/06B
636	490	MPM 2 L4(FEL/OVL)	36.0	.0	0			07A			?06B	?06B/TRL	
637	54	SPM 1 L3/TRA(H)	50.0	.0	0	10A(?)	?						12A/09D
638	165	SPM 2 L3/ANG(REP)	70.0		2						12A/05A		
639	185	SPM 2 L4/TRA/OFR(BOX)	62.0		1	10A	PAN	10A			05A/18A		12A/09D/05A
640	116	SPM 2 L3/TRA/OFR(CAN)	100.0			08A/10A(?)		07A			12A/JAG/08A		12A/10A/08A
641	280	MPM 1 L3(PRO/OVL)	40.0						AVI(?)				
642	620	MPM 2 L4(ANT/CIR)	36.0								09D(?)		
643	420	MPM 2 L4(FEL/REC)	30.0					08A			09D(?)	TRL/06B(?)	06A/05A
644	297	MPM 1 L4(SUR/OVL)	31.0		1			17A/01F	SUR				
645	200	MPM 1 L3(OVL)	30.0		1			17A					
646	128	SPM 2 L3/TRA/OFR(BOX)	44.5			02A/10A	01A	(?)			10A/19A		12A/09D(?)
647	356	MPM 1 PE/FLL		20.0				03A/08A/JHD					12A

APPENDIX 4

ANALYSIS OF DECORATIVE MOTIFS AND PATTERNS

DC	TC	Description	SPM1 L3/CON abo	bel	rim	bas	SPM1 L3/TRA abo	bel	rim	bas
01A	(18)	interlaced band(s)	---	--2	---	---	--1	-17	---	---
01B	(15)	zig-zag band(s)					---	---	--2	---
01C	(28)	arrows					---	---	--3	---
01D	(16)	wave band								
01E	(17)	wave band with spots								
01F	(14)	simple linear band	--1	--12	---	--6	---	--2	--1	---
02A	(22)	basketry	--1	--1	---	---	-16	--5	---	---
03A	(23)	chevron					--3	---	--3	--1
04A	(1)	cross					--1	---	--2	---
05A	(12)	curvilinear	---	--1	---	--2	---	--3	---	--9
06A	(25)	diamond with spot					--1	---	--1	---
06B	(24)	diamond					--1	---	---	--1
07A	(19)	fret					--1	---	--2	---
08A	(21)	guilloche	--5	--9	---	---	--2	---	--1	---
09A	(27)	square/rect.with spot	---	--1	---	---	--1	---	---	---
09C	(26)	simple square								
09D	(11)	linear	---	--2	---	-15	-13	--8	-14	-41
10A	(20)	meander	--4	--6	---	--2	-24	--4	--5	--1
11A	(30)	pellets	---	--1	---	--1	---	---	---	--1
12A	(13)	perforation	--1	---	---	---	---	---	---	-47
13A	(3)	ring with spot								
13B	(4)	ring with rosette								
13C	(2)	ring(s)								
13D	(5)	ring with star								
14A	(29)	scales								
15A	(8)	spiral with spots								
15B	(7)	simple spiral								
17A	(31)	nubs								
18A	(10)	spots								
19A	(6)	loop(s)								
20A	(9)	volute					---	---	---	--3
ANT	(A)	anthropomorphic	---	--8	---	---				
AVI	(C)	avian	---	--2	---	---				
FEL	(D)	feline								
FRO	(E)	frog								
HAH	(B)	half-human/half-animal								
REP	(F)	reptilian	---	--5	---	---				
SIM	(G)	simian	---	--4	---	---				
ZOO	(H)	zoomorphic	---	--2	---	---				
TOTAL METATES ANALYZED			27				48			

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

abo = above grinding top
bel = below grinding top
rim = grinding top rim
bas = metate base

DC	TC	Description	SPM2 L3/TRA/OFR abo	bel	rim	hed	bas	SPM2 L4/TRA/OFR abo	bel	rim	hed	bas
01A	(18)	interlaced band(s)	--4	--9	---	--2	--1					
01B	(15)	zig-zag band(s)	--3	--3	--2	--4	--3	---	---	--1	---	---
01C	(28)	arrows	---	---	--2	--4	--1					
01D	(16)	wave band	--1	--1	---	---	--1	---	---	--1	---	---
01E	(17)	wave band with spots										
01F	(14)	simple linear band	---	--1	---	---	---					
02A	(22)	basketry	-10	--1	---	---	---	--2	--1	---	---	---
03A	(23)	chevron	---	---	---	---	--2					
04A	(1)	cross	---	---	--4	--1	---					
05A	(12)	curvilinear	---	--1	---	-13	-14	---	---	---	--2	--2
06A	(25)	diamond with spot	---	---	---	---	--1					
06B	(24)	diamond	---	---	---	--6	--1					
07A	(19)	fret	--7	---	-18	---	--2					
08A	(21)	guilloche	--3	---	--1	--2	--9					
09A	(27)	square/rect.with spot	---	--1	--3	---	---	--1	---	--1	---	---
09C	(26)	simple square	---	---	--1	--3	--1	---	---	---	--1	---
09D	(11)	linear	-13	--3	-19	-19	-39	---	---	---	---	--3
10A	(20)	meander	-30	--3	-24	--3	--9	--4	---	--2	---	---
11A	(30)	pellets	--1	---	--1	--4	--1	---	---	---	---	--1
12A	(13)	perforation	---	---	---	-26	-62	---	---	---	---	--5
13A	(3)	ring with spot	---	---	--2	--2	--2					
13B	(4)	ring with rosette										
13C	(2)	ring(s)										
13D	(5)	ring with star										
14A	(29)	scales	---	---	--3	--2	--1					
15A	(8)	spiral with spots	---	---	---	---	--1					
15B	(7)	simple spiral	---	---	---	--2	--2					
17A	(31)	nubs	---	---	---	---	--1					
18A	(10)	spots	---	---	---	--3	---	---	---	---	--2	---
19A	(6)	loop(s)	---	--1	---	--3	---	---	---	--1	--1	---
20A	(9)	volute	---	--1	---	--1	--9	---	---	---	---	--1
ANT	(A)	anthropomorphic						---	---	---	---	-(1)
AVI	(C)	avian										
FEL	(D)	feline	---	---	---	--1	---					
FRO	(E)	frog										
HAH	(B)	half-human/half-animal										
REP	(F)	reptilian	---	---	---	--3	---					
SIM	(G)	simian										
ZOO	(H)	zoomorphic										
TOTAL METATES ANALYZED			63					5				

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

abo = above grinding top
bel = below grinding top
rim = grindig top rim
hed = head
bas = metate base

DC	TC	Description	SPM2 L3/TRA/SOL abo bel hed	SPM2 L3/ANG rim hed	SPM2 L4/FSL abo hed bas
01A	(18)	interlaced band(s)	--- --1 ---	--- ---	
01B	(15)	zig-zag band(s)			
01C	(28)	arrows			
01D	(16)	wave band			
01E	(17)	wave band with spots			
01F	(14)	simple linear band			
02A	(22)	basketry	--1 --- ---		
03A	(23)	chevron			--1 --- ---
04A	(1)	cross		--- --1	
05A	(12)	curvilinear		--- -13	
06A	(25)	diamond with spot			
06B	(24)	diamond			
07A	(19)	fret			
08A	(21)	guilloche			
09A	(27)	square/rect.with spot			
09C	(26)	simple square			
09D	(11)	linear	--- --- --1	--- --1	
10A	(20)	meander		--4 ---	--1 --- ---
11A	(30)	pellets	--- --- --1	--- --2	
12A	(13)	perforation		--- -13	--- --- -11
13A	(3)	ring with spot			
13B	(4)	ring with rosette			
13C	(2)	ring(s)			
13D	(5)	ring with star			
14A	(29)	scales			
15A	(8)	spiral with spots			
15B	(7)	simple spiral			
17A	(31)	nubs			
18A	(10)	spots			
19A	(6)	loop(s)			
20A	(9)	volute			
ANT	(A)	anthropomorphic			
AVI	(C)	avian			
FEL	(D)	feline			
FRO	(E)	frog			
HAH	(B)	half-human/half-animal			
REP	(F)	reptilian			
SIM	(G)	simian			--- --1 ---
ZOO	(H)	zoomorphic			
TOTAL METATES ANALYZED			7	18	11

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

abo = above grinding top
bel = below grinding top
rim = grindig top rim
hed = head
bas = metate base

DC	TC	Description	MPM1 L3 rim bas	MPM1 L3(MAR) bel rim bas	MPM1 L3(FP) rim f-p
01A	(18)	interlaced band(s)			
01B	(15)	zig-zag band(s)		--- --- --2	
01C	(28)	arrows			
01D	(16)	wave band			
01E	(17)	wave band with spots			
01F	(14)	simple linear band	--1 --1		
02A	(22)	basketry			
03A	(23)	chevron			
04A	(1)	cross			
05A	(12)	curvilinear			
06A	(25)	diamond with spot			
06B	(24)	diamond			
07A	(19)	fret			
08A	(21)	guilloche			
09A	(27)	square/rect.with spot			
09C	(26)	simple square			
09D	(11)	linear	--- --1		
10A	(20)	meander			
11A	(30)	pellets			
12A	(13)	perforation			
13A	(3)	ring with spot			
13B	(4)	ring with rosette			
13C	(2)	ring(s)			
13D	(5)	ring with star			
14A	(29)	scales			
15A	(8)	spiral with spots			
15B	(7)	simple spiral			
17A	(31)	nubs	-29 ---	--- -12 ---	-12 ---
18A	(10)	spots			
19A	(6)	loop(s)			
20A	(9)	volute			
ANT	(A)	anthropomorphic	--1 ---	--- --2 ---	--- --4
AVI	(C)	avian		--- --- --1	--- --4
FEL	(D)	feline			
FRO	(E)	frog			
HAH	(B)	half-human/half-animal			
REP	(F)	reptilian	--1 ---		--- --1
SIM	(G)	simian			--- --1
ZOO	(H)	zoomorphic	--1 ---		--- --3
TOTAL METATES ANALYZED			31	14	14

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

bel = below grinding top
rim = grindig top rim
f-p = flying panel
bas = metate base

DC	TC	Description	MPM1 L3(FP+) rim f-p bas	MPM1 L3/EFF rim bas	MPM1 L3(PRO) bel
01A	(18)	interlaced band(s)			
01B	(15)	zig-zag band(s)			
01C	(28)	arrows			
01D	(16)	wave band			
01E	(17)	wave band with spots			
01F	(14)	simple linear band	--1 --- ---		
02A	(22)	basketry			
03A	(23)	chevron			
04A	(1)	cross			
05A	(12)	curvilinear			
06A	(25)	diamond with spot			
06B	(24)	diamond			
07A	(19)	fret			
08A	(21)	guilloche			
09A	(27)	square/rect.with spot			
09C	(26)	simple square			
09D	(11)	linear	--- --- --1		
10A	(20)	meander			
11A	(30)	pellets			
12A	(13)	perforation			
13A	(3)	ring with spot			
13B	(4)	ring with rosette			
13C	(2)	ring(s)			
13D	(5)	ring with star			
14A	(29)	scales			
15A	(8)	spiral with spots			
15B	(7)	simple spiral			
17A	(31)	nubs	-26--- ---	--5 ---	
18A	(10)	spots			
19A	(6)	loop(s)			
20A	(9)	volute			
ANT	(A)	anthropomorphic	--4 --8 -15	--- --3	
AVI	(C)	avian	--- -10 -25	--- --1	--3
FEL	(D)	feline	--- --6 --1		
FRO	(E)	frog			
HAH	(B)	half-human/half-animal	--- -12 --1	--- --1	
REP	(F)	reptilian	--- --7 --2		--1
SIM	(G)	simian	--- --2 --1		
ZOO	(H)	zoomorphic			
TOTAL METATES ANALYZED			31	5	3

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

bel = below grinding top
rim = grindig top rim
f-p = flying panel
bas = metate base

DC	TC	Description	MPM1 L4 rim	MPM1 L4 app	MPM1 L4 bas	MPM1 L4/HS rim	MPM1 L4/HS bas	MPM1 L4/AS rim	MPM1 L4/AS app	MPM1 L4/AS bas
01A	(18)	interlaced band(s)								
01B	(15)	zig-zag band(s)	--1	---	---					
01C	(28)	arrows								
01D	(16)	wave band								
01E	(17)	wave band with spots								
01F	(14)	simple linear band	-17	---	---	--5	---	--2	---	---
02A	(22)	basketry								
03A	(23)	chevron				--1	---			
04A	(1)	cross	---	--1	---					
05A	(12)	curvilinear								
06A	(25)	diamond with spot								
06B	(24)	diamond								
07A	(19)	fret								
08A	(21)	guilloche	--1	---	---					
09A	(27)	square/rect.with spot								
09C	(26)	simple square								
09D	(11)	linear								
10A	(20)	meander								
11A	(30)	pellets	-14	---	---	--1	---	--4	---	---
12A	(13)	perforation								
13A	(3)	ring with spot								
13B	(4)	ring with rosette								
13C	(2)	ring(s)								
13D	(5)	ring with star								
14A	(29)	scales								
15A	(8)	spiral with spots								
15B	(7)	simple spiral								
17A	(31)	nubs	-16	---	---	--3	---	--4	---	---
18A	(10)	spots								
19A	(6)	loop(s)								
20A	(9)	volute								
ANT	(A)	anthropomorphic	--9	--3	--3	--9	-12	--1	--1	---
AVI	(C)	avian	---	--4	---					
FEL	(D)	feline	--1	---	---					
FRO	(E)	frog								
HAH	(B)	half-human/half-animal								
REP	(F)	reptilian	--1	---	---					
SIM	(G)	simian	---	---	--5			---	---	--5
ZOO	(H)	zoomorphic						---	--1	---
TOTAL METATES ANALYZED			30			12		5		

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

rim = grindig top rim
app = appendage
bas = metate base

DC	TC	Description	MPM1 PE rim	MPM1 PE bas	MPM1 PE/BIC rim	MPM1 PE/BIC bas	MPM1 FS rim	MPM1 FS bas	MPM1 ATL rim	MPM1 ATL bas
01A	(18)	interlaced band(s)								
01B	(15)	zig-zag band(s)							--1	---
01C	(28)	arrows								
01D	(16)	wave band								
01E	(17)	wave band with spots								
01F	(14)	simple linear band	--4	---					--2	---
02A	(22)	basketry	---	--1						
03A	(23)	chevron							--4	---
04A	(1)	cross	--1	---	--1	---	---	--1	--1	---
05A	(12)	curvilinear								
06A	(25)	diamond with spot			--1	---				
06B	(24)	diamond	--1	--1			--1	--1	--2	---
07A	(19)	fret					--2	---	--2	---
08A	(21)	guilloche	--5	---			--3	---	--7	---
09A	(27)	square/rect.with spot			--1	---				
09C	(26)	simple square								
09D	(11)	linear	--2	---	--2	--2	--2	---	--3	---
10A	(20)	meander			--1	--1	--2	---	--2	---
11A	(30)	pellets	--1	---						
12A	(13)	perforation	---	-24						
13A	(3)	ring with spot			---	--1				
13B	(4)	ring with rosette								
13C	(2)	ring(s)					---	--1		
13D	(5)	ring with star								
14A	(29)	scales								
15A	(8)	spiral with spots								
15B	(7)	simple spiral								
17A	(31)	nubs	--3	---						
18A	(10)	spots								
19A	(6)	loop(s)	--1	---			--1	--1		
20A	(9)	volute								
ANT	(A)	anthropomorphic	--7	--1	---	--1	--1	--2	---	--9
AVI	(C)	avian								
FEL	(D)	feline	-17	---			---	--6	---	--4
FRO	(E)	frog					---	--1		
HAH	(B)	half-human/half-animal							---	--7
REP	(F)	reptilian								
SIM	(G)	simian					---	--2	---	--8
ZOO	(H)	zoomorphic	--4	---			---	--1		
TOTAL METATES ANALYZED			31		3		15		28	

DC = Code used in database
TC = Code used in text

rim = grindig top rim
bas = metate base

For explanation of metate variety codes
refer to Metate Glossary in Appendix 6

DC	TC	Description	MPM2 L4(FEL) rim hed tal bas	MPM2 L4(FEL/DH etc) rim hed tal bas
01A	(18)	interlaced band(s)		
01B	(15)	zig-zag band(s)	-11 --7 --5 --2	--3 --2 --1 ---
01C	(28)	arrows	--1 --6 --- --	
01D	(16)	wave band	--5 --- --- ---	
01E	(17)	wave band with spots	--1 --- --- ---	
01F	(14)	simple linear band	-28--1 --- --3	--8 --1 --1 --
02A	(22)	basketry		
03A	(23)	chevron	-16--5 --1 --1	--9 --1 --- ---
04A	(1)	cross	--1 --2 --- ---	
05A	(12)	curvilinear	--1 --7 --2 --5	--2 --1 --1 --2
06A	(25)	diamond with spot	--3 --4 --4 --6	--- --- --1 --1
06B	(24)	diamond	-11 -43 -52 -55	--- --9 --7 --7
07A	(19)	fret	--6 --- --- ---	--1 --- --- ---
08A	(21)	guilloche	-42 --2 --6 --1	--4 --- --- ---
09A	(27)	square/rect.with spot		
09C	(26)	simple square	--1 --- --1 ---	
09D	(11)	linear	-13 -24 --9 --6	--4 --4 --- --3
10A	(20)	meander	-10 --- --- ---	
11A	(30)	pellets	--9 --1 --- --1	--3 --2 --- ---
12A	(13)	perforation		--- --- --- --1
13A	(3)	ring with spot	--1 -10 --3 ---	--1 --3 --- --2
13B	(4)	ring with rosette	--- --- --1 --4	
13C	(2)	ring(s)	--2 --4 --1 --5	--- --3 --- ---
13D	(5)	ring with star	--- --- --1 --1	
14A	(29)	scales	--1 --- -17 ---	
15A	(8)	spiral with spots		
15B	(7)	simple spiral		
17A	(31)	nubs	--6 --- --- ---	--5 --- --- ---
18A	(10)	spots		
19A	(6)	loop(s)	--5 --2 --2 --1	--3 --2 --- --
20A	(9)	volute		
ANT	(A)	anthropomorphic	--3 --- --- ---	--- --- --- --1
AVI	(C)	avian		
FEL	(D)	feline	--- --1 --- ---	--- --- --1 --3
FRO	(E)	frog		
HAH	(B)	half-human/half-animal		
REP	(F)	reptilian		
SIM	(G)	simian		--- --- --- --7
ZOO	(H)	zoomorphic		--- --- --- --1
TOTAL METATES ANALYZED			145	30

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

rim = grindig top rim
hed = head
tal = tail
bas = metate base

DC	TC	Description	MPM2 L4(REP) rim hed tal bas	MPM2 L4(REP/DH etc) rim hed tal bas
01A	(18)	interlaced band(s)		
01B	(15)	zig-zag band(s)	--1 --- --- ---	
01C	(28)	arrows	--1 --- --- ---	
01D	(16)	wave band		--1 --- --- ---
01E	(17)	wave band with spots		
01F	(14)	simple linear band	--2 --- --- ---	--2 --- --- ---
02A	(22)	basketry		
03A	(23)	chevron	--- --1 --- ---	--- --2 --- ---
04A	(1)	cross		
05A	(12)	curvilinear	--1 --- --- --1	--- --- --1 --2
06A	(25)	diamond with spot	--- --1 --- ---	
06B	(24)	diamond	--- --1 --2 --1	--1 --2 --- --1
07A	(19)	fret	--1 --- --- ---	--1 --- --- ---
08A	(21)	guilloche	--2 --- --- ---	
09A	(27)	square/rect.with spot		
09C	(26)	simple square		--1 --- --- ---
09D	(11)	linear	--3 --1 --- --2	--1 --1 --1 --3
10A	(20)	meander	--1 --- --- ---	
11A	(30)	pellets	--1 --- --- --2	--1 --- --- --2
12A	(13)	perforation		--- --1 --- ---
13A	(3)	ring with spot	--1 --- --1 ---	
13B	(4)	ring with rosette		--- --- --- --1
13C	(2)	ring(s)	--1 --1 --1 ---	
13D	(5)	ring with star	--- --- --- --1	--- --- --- --1
14A	(29)	scales	--- --- --3 ---	
15A	(8)	spiral with spots	--- --- --- --1	
15B	(7)	simple spiral	--- --- --- --1	--- --- --- --5
17A	(31)	nubs	--1 --- --- ---	--3 --- --- ---
18A	(10)	spots		
19A	(6)	loop(s)	--1 --- --1 ---	
20A	(9)	volute		
ANT	(A)	anthropomorphic	--1 --- --- ---	--2 --- --- --1
AVI	(C)	avian		
FEL	(D)	feline	--1 --- --- ---	
FRO	(E)	frog		
HAH	(B)	half-human/half-animal		
REP	(F)	reptilian		
SIM	(G)	simian		--- --- --- --2
ZOO	(H)	zoomorphic		--3 --- --- ---
TOTAL METATES ANALYZED			15	18

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

rim = grindig top rim
hed = head
tal = tail
bas = metate base

DC	TC	Description	MPM2 L4(ANT) rim hed tal	MPM2 L4(ZOO) rim bas	MPM2 L4(ZOO/DH etc) rim
01A	(18)	interlaced band(s)			
01B	(15)	zig-zag band(s)	--1 --- ---		
01C	(28)	arrows			
01D	(16)	wave band			
01E	(17)	wave band with spots			
01F	(14)	simple linear band		--1 ---	
02A	(22)	basketry			
03A	(23)	chevron	--1 --- ---	--1 ---	
04A	(1)	cross			
05A	(12)	curvilinear			
06A	(25)	diamond with spot			
06B	(24)	diamond			
07A	(19)	fret			
08A	(21)	guilloche			
09A	(27)	square/rect.with spot			
09C	(26)	simple square			
09D	(11)	linear	--- --2 --1		
10A	(20)	meander		--- --1	
11A	(30)	pellets		--1 ---	
12A	(13)	perforation		--- --1	
13A	(3)	ring with spot	--- --1 ---		
13B	(4)	ring with rosette			
13C	(2)	ring(s)	--- --1 ---	--- --1	
13D	(5)	ring with star			
14A	(29)	scales			
15A	(8)	spiral with spots			
15B	(7)	simple spiral			
17A	(31)	nubs		--4 ---	--1 ---
18A	(10)	spots			
19A	(6)	loop(s)			
20A	(9)	volute			
ANT	(A)	anthropomorphic			--1 ---
AVI	(C)	avian			
FEL	(D)	feline			
FRO	(E)	frog			
HAH	(B)	half-human/half-animal			
REP	(F)	reptilian			
SIM	(G)	simian			
ZOO	(H)	zoomorphic			
TOTAL METATES ANALYZED			3	12	3

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

rim = grindig top rim
hed = head
tal = tail
bas = metate base

DC	TC	Description	MPM2 FS hed	bas	MPM2 PE rim	bas	MPM2 AS rim	hed	tal	bas
01A	(18)	interlaced band(s)								
01B	(15)	zig-zag band(s)			--1	---	---	--1	--1	--1
01C	(28)	arrows								
01D	(16)	wave band								
01E	(17)	wave band with spots								
01F	(14)	simple linear band			--1	---				
02A	(22)	basketry								
03A	(23)	chevron								
04A	(1)	cross								
05A	(12)	curvilinear								
06A	(25)	diamond with spot	---	--1			---	--1	---	--1
06B	(24)	diamond	---	--1	---	--1	---	---	--1	---
07A	(19)	fret								
08A	(21)	guilloche					--1	---	---	---
09A	(27)	square/rect.with spot								
09C	(26)	simple square								
09D	(11)	linear			--3	---	--1	---	---	---
10A	(20)	meander			---	--1				
11A	(30)	pellets								
12A	(13)	perforation								
13A	(3)	ring with spot					---	---	---	--1
13B	(4)	ring with rosette								
13C	(2)	ring(s)	---	--1						
13D	(5)	ring with star								
14A	(29)	scales								
15A	(8)	spiral with spots								
15B	(7)	simple spiral	--1	---						
17A	(31)	nubs								
18A	(10)	spots								
19A	(6)	loop(s)								
20A	(9)	volute								
ANT	(A)	anthropomorphic								
AVI	(C)	avian								
FEL	(D)	feline					---	---	---	--3
FRO	(E)	frog								
HAH	(B)	half-human/half-animal	---	--2						
REP	(F)	reptilian	---	--1						
SIM	(G)	simian	---	--2			---	---	---	--2
ZOO	(H)	zoomorphic								
TOTAL METATES ANALYZED			4		7		5			

DC = Code used in database
TC = Code used in text

For explanation of metate variety codes refer to Metate Glossary in Appendix 6

rim = grindig top rim
hed = head
tal = tail
bas = metate base

APPENDIX 5

KEY TO LOCATION OF METATES:
INDEX ACCORDING TO CODES USED FOR COLLECTIONS OR PUBLICATIONS

Code	Name
ATL	ATLANTA High Museum of Art
BAL	BALTIMORE Museum of Art
BAR	BARCELONA Coleccion Alberto Folch Rusinol
BAU	BAUDEZ Claude-François
BE	BERLIN Museum für Völkerkunde
BER	BERKELEY Lowie Museum of Anthropology
BIR	BIRMINGHAM Museum
BM	BRITISH MUSEUM London
BON	BONHAMS Auctioneers London
BOR	BORDEAUX Musée des Beaux-Arts
BOW	BOWERS MUSEUM, Sta Ana, California
BRE	BREMEN Uebersee Museum
BRI	BRISTOL Museum & Art Gallery
BRU	BRUXELLES Musées Royaux d'Art et d'Histoire
CAM	CAMBRIDGE Mus.of Archaeology & Anthropology
CAN	CANNES Musée de la Castre
CHA	CHARLOTTE, North Carolina (Francis Robicsek)
CHR	CHRISTIE'S Auctioneers London
CLE	CLEVELAND Museum of Art
COL	COLOGNE Rautenstrauch-Joest-Museum
COU	COUTURIER Robert, Paris
CRB	COSTA RICA Banco Nacional, San José
CRC	COSTA RICA Caja del Seguro Social
CRI	COSTA RICA Instituo Nacional de Seguros
CRM	COSTA RICA Museo Nacional
DAL	DALLAS Museum of Art
DEL	DELETAILLE Emile, Bruxelles
DEN	DENVER Art Museum
EBS	EBSTEIN Dr. Franz, New York
EDI	EDINBURGH Royal Museum of Scotland
FM	MEDDENS Frank (Leo Meddens, Holland)
GE	GENEVA Musée et Institut d'Ethnographie
GEN	GENOVA Lunardi Collection
HA	HASTINGS Public Museum & Art Gallery
HAR	HARTMAN Carl Vilhelm
HOU	HOUSTON Museum of Fine Arts
HUD	HUDSON Museum, University of Maine
ICH	ICHON Alain
JIA	JIMENEZ-ALVARADO Alfonso, Costa Rica
JIM	JIMENEZ de Roy Maria Eugenia, Costa Rica
LAC	LOS ANGELES County Museum of Art
LAN	LOS ANGELES Natural History Museum
LDM	LOUDMER Guy, Auctioneer, Paris
LIV	LIVERPOOL County Museum
LO	LOURIE Miles J., New York
LOT	LOTHROP S.K.
LOU	ST. LOUIS Art Museum
MA	MADRID Museo de America
MAC	MacCURDY George, C.
MAN	MANNHEIM Städtisches Reiss Museum
MAR	MARIOTTA Alfredo, Lugano
MAS	MASON J. Alden

Code	Name
MET	METROPOLITAN Museum of Art New York
MNI	MANNIL Harry, Caracas
MON	MONTREAL Redpath Museum
MVM	MUENCHEN Staatl. Museum fuer Voelkerkunde
NOT	NOTTEBOHM Karl-Heinz, Guatemala
NU	NUERNBERG Naturhistorische Gesellschaft
NYA	NEW YORK Museum of the American Indian
NYB	NEW YORK Brooklyn Museum
NYT	NEW YORK Spencer Throckmorton
ODU	ODUBER Collection, Costa Rica
ORL	NEW ORLEANS Museum of Art
PA	PARIS Musée de l'Homme
PAE	PAEZ Collection, Costa Rica
PAN	PANAMA Museo del Hombre Panameno
PEA	PEABODY Museum of Archaeology and Ethnology
PEN	PENN STATE Matson Museum of Anthropology
PRI	PRINCETON University Art Museum
PUM	PENNSYLVANIA University Museum
RAB	RABIER Francois, Bruxelles
RIM	RIMINI Musei Comunali
ROM	ROMA Museo Preistorico e Etnografico
RVL	LEIDEN Rijksmuseum voor Volkenkunde
SAN	SAN ANTONIO Museum of Art
SCR	SCRIPPS COLLEGE Claremont, California
SFR	SAN FRANCISCO M. H. DeYoung Memorial Museum
SMI	SMITHSONIAN Institution, Washington
SNA	SNARSKIS Michael, San José
SOT	SOTHEBY'S Auctioneers, New York
STO	STONE Doris
SWE	STOCKHOLM Royal Ethnographical Museum
TUL	TULANE University, New Orleans
VEL	VELASCO Mercedes
VIN	VINCULOS Revista de Antropologia
VIP	VINCENT Patricia, London
VMB	BASEL Museum für Völkerkunde
VVM	WIEN Völkerkundenmuseum
WEL	WELLCOME Collection, Science Museum, London
ZH	ZÜRICH Stiftung altamerikanischer Kulturen
ZHB	ZÜRICH Roland Burri
ZHR	ZÜRICH Rietberg Museum
ZHV	ZÜRICH Völkerkundenmuseum

Collection	Metate variety	Prov	ID	Page
ATL	SPM 2 L3/TRA/OFR(AVI)		267	91
ATL	MPM 2 L4(FEL/REC)		423	438
BAL	SPM 1 L3/TRA(H)		255	53
BAL	MPM 2 L4(FEL/SRE)		470	460
BAR	MPM 1 L3(FP+/SRE)		329	259
BAR	MPM 2 L4(REP/LDH/REC)		633	611
BAR	MPM 2 L4(FEL/CIR)		634	537
BAR	MPM 2 L4(FEL/OVL)		635	516
BAR	MPM 2 L4(FEL/OVL)		636	490
BAR	SPM 1 L3/TRA(H)		637	54
BAU	SPM 2 L3/TRA/OFR(AVI)	1 GN	268	102
BAU	SPM 2 L3/TRA/OFR(AVI)		273	85
BAU	MPM 1 L3(MAR/REC)		319	222
BAU	MPM 1 L4/HS(OVL)*	2 GCh	348	324
BAU	MPM 2 L4(FEL/PAN/REC)		444	566
BAU	MPM 1 L3(FP+/SRE)		538	273
BE	SPM 1 L3/CON(GEO)	2 GN	1	10
BE	SPM 1 L3/TRA(H)	2 GN	6	49
BE	SPM 1 L3/TRA(H)	2 GN	8	65
BE	SPM 1 L3/TRA(K)	2 GN	15	75
BE	SPM 1 L3/TRA(H)		17	37
BE	SPM 2 L3/TRA/OFR(AVI)	2 GN	26	84
BE	SPM 2 L3/TRA/OFR(BOX)		37	133
BE	SPM 2 L3/TRA/OFR(BOX)	GN	38	129
BE	SPM 2 L4/TRA/OFR(ZOO)	2 GN	45	187
BE	MPM 1 L4(SUR/OVL)		77	294
BE	MPM 1 L4/HS(OVL)	2 CCR	86	320
BE	MPM 1 L4/HS(OVL)	2 CCR	89	321
BE	MPM 1 PE/FLS		93	348
BE	MPM 1 FS/RB(CIR)	2 CCR	117	374
BE	MPM 1 FS/RB(CIR)	2 CCR	122	376
BE	MPM 1 FS(CIR)		127	373
BE	MPM 2 L4(FEL/OVL)		151	534
BE	MPM 2 L4(FEL/OVL)	3 CCR	190	487
BE	MPM 2 L4(REP/LDH/SRE)	2 CCR	208	615
BE	MPM 2 L4(FEL/PDH/OVL)		211	580
BE	MPM 2 L4(REP/LOO/OVL)		215	608
BE	MPM 2 PE/BIC(REP/CIR)	2 CCR	226	641
BE	SPM 1 L3/CON(GEO)	2 GN	479	6
BE	SPM 2 L3/TRA/OFR(ZOO)		509	146
BE	MPM 2 L4(FEL/OVL)	2 CCR	591	474
BE	MPM 2 L4(FEL/REC)		593	424
BE	MPM 2 L4(FEL/OVL)	1 CCR	595	502
BE	MPM 2 L4(FEL/REC)		596	428
BER	SPM 2 L3/FSL(FEL)*		482	175
BIR	MPM 1 FS(OVL)		131	371
BM	SPM 1 L3/TRA(H)		16	32
BM	SPM 1 L3/TRA(K)		19	70
BM	SPM 1 L3/TRA(H)		20	44
BM	SPM 1 L3/TRA(K)		21	71

Collection	Metate variety	Prov	ID	Page
BM	SPM 1 L3/TRA(K)	2 GN	22	77
BM	SPM 1 L3/TRA(H)	2 GN	23	62
BM	SPM 1 L3/TRA(K)	2 GN	24	74
BM	MPM 1 L3(CIR)		66	209
BM	MPM 1 L3(CIR)		67	207
BM	MPM 1 L3(OVL)		74	198
BM	MPM 1 L4/HS(OVL)		87	323
BM	MPM 1 L4(SUR/PAN/OVL)		90	310
BM	MPM 1 PE/FLS		92	336
BM	MPM 1 PE/DRU		104	366
BM	MPM 1 ATL/RB(CIR)		112	396
BM	MPM 1 ATL/RB(CIR)		113	397
BM	MPM 1 ATL/RB(CIR)		118	393
BM	MPM 2 L4(FEL/REC)		134	427
BM	MPM 2 L4(FEL/OVL)		144	470
BM	MPM 2 L4(FEL/OVL)		146	514
BM	MPM 2 L4(FEL/OVL)		147	500
BM	MPM 2 L4(FEL/OVL)		148	509
BM	MPM 2 L4(FEL/SRE)		165	443
BM	MPM 2 L4(FEL/SRE)		167	448
BM	MPM 2 L4(FEL/OVL)		177	531
BM	MPM 2 L4(FEL/OVL)		180	476
BM	MPM 2 L4(FEL/CIR)		187	544
BM	MPM 2 L4(REP/OVL)		214	589
BM	MPM 2 L4(REP/OVL)		218	588
BM	MPM 2 L4(ZOO/CIR)		221	631
BM	MPM 2 L4(ANT/OVL)		223	619
BM	MPM 2 AS(FEL/OVL)		228	648
BON	MPM 1 L4/AS(SUR/OVL)		123	329
BOR	MPM 2 L4(FEL/REC)		599	432
BOR	MPM 2 L4(ZOO/OVL)		618	629
BOR	MPM 2 L4(FEL/OVL)		619	501
BOR	MPM 2 L4(ZOO/OVL)		620	626
BOR	MPM 2 L4(FEL/REC)		621	423
BOW	SPM 1 L3/TRA(H)		261	56
BRE	SPM 1 L3/TRA(H)		18	43
BRE	SPM 2 L3/TRA/OFR(AVI)	2 GN	27	87
BRE	SPM 2 L3/TRA/OFR(BOX)	1 GN	36	131
BRE	MPM 1 L3(CIR)	1 CCR	71	210
BRE	MPM 1 L3(OVL)*		73	203
BRE	MPM 1 L4(SUR/OVL)		80	304
BRE	MPM 1 L4/HS(OVL)		85	316
BRE	MPM 1 PE/FLS	2 CCR	97	350
BRE	MPM 1 PE/ODD*		107	333
BRE	MPM 1 PE/BIC		110	362
BRE	MPM 1 PE/BIC		111	361
BRE	MPM 1 FS(OVL)	2 CCR	125	372
BRE	MPM 2 L4(FEL/REC)	2 CCR	129	426
BRE	MPM 2 L4(FEL/OVL)		149	517
BRE	MPM 2 L4(FEL/OVL)	CCR	150	482

Collection	Metate variety	Prov	ID	Page
BRE	MPM 2 L4(FEL/SRE)		170	464
BRE	MPM 2 L4(FEL/SRE)		171	458
BRE	MPM 2 L4(FEL/SRE)	2 CCR	194	447
BRE	MPM 2 L4(FEL/DH/OVL)	1 CCR	205	557
BRE	MPM 2 L4(ZOO/LDH/OVL)	2 CCR	209	635
BRE	MPM 2 L4(ANT/OVL)		222	618
BRE	MPM 2 L4(FEL/PDH/SRE)	2 CCR	227	579
BRI	SPM 2 L3/ANG(REP)		616	169
BRU	SPM 1 L3/TRA(H)		256	55
BRU	MPM 1 L3/EFF(SRE)		322	282
BRU	MPM 1 L4(SUR/OVL)		353	303
BRU	MPM 2 L4(REP/OVL)		397	594
BRU	MPM 2 L4(REP/LDH/REC)		412	610
BRU	MPM 2 L4(REP/OVL)		442	593
BRU	MPM 2 AS(REP/OVL)		475	651
BRU	MPM 1 FS(REC)		562	370
BRU	MPM 1 L4/HS(OVL)*		563	317
BRU	MPM 1 ATL(CIR)		564	383
BRU	MPM 2 L4(FEL/OVL)		576	495
BRU	MPM 2 L4(FEL/OVL)		577	525
BRU	MPM 2 L4(FEL/SRE)		579	452
BRU	MPM 2 L4(FEL/REC)		580	415
BRU	MPM 2 L4(FEL/DH/OVL)		585	559
BRU	MPM 2 L4(REP/DH/NRI)		586	602
CAM	MPM 1 PE/FLS		95	335
CAM	MPM 2 L4(FEL/REC)		128	429
CAM	MPM 2 L4(FEL/OVL)		154	485
CAM	MPM 2 L4(FEL/PAN/SRE)		159	569
CAM	MPM 2 L4(FEL/OVL)		195	484
CAM	MPM 2 L4(ZOO/CIR)		220	632
CAN	MPM 2 L4(FEL/REC)		495	419
CHA	SPM 2 L3/FSL(CAN)		622	174
CHA	SPM 2 L3/FSL(REP)		623	181
CHA	MPM 1 L3(FP+/SRE)*		624	263
CHA	MPM 1 L3(OVL)		625	201
CHA	MPM 1 L3(FP/REC)*		626	233
CHA	MPM 2 L4(FEL/SRE)		627	451
CHR	MPM 2 L4(FEL/OVL)		399	507
CHR	MPM 2 L4(REP/OVL)		422	591
CHR	MPM 1 PE/FLL		647	356
CLE	SPM 1 L3/TRA(H)		258	59
CLE	MPM 2 L4(FEL/REC)		431	436
COL	MPM 2 L4(FEL/REC)		428	437
COU	MPM 2 L4(FEL/OVL)		402	532
CRB	SPM 2 L3/TRA/OFR(AVI)	1 CCR	265	103
CRB	SPM 2 L3/TRA/OFR(FEL)		281	122
CRB	SPM 2 L3/TRA/OFR(CAN)	1 CCR	288	107
CRB	SPM 2 L3/FSL(CAN)		297	173
CRB	MPM 1 L3(FP+/SRE)		328	264
CRB	MPM 1 L3(FP+/SRE)		332	270

Collection	Metate variety	Prov	ID	Page
CRB	MPM 1 L4(SUR/OVL)*	1 CCR	345	307
CRB	MPM 1 L4(SUR/OVL)*	1 CCR	349	308
CRB	MPM 1 ATL(CIR)		383	384
CRB	MPM 1 ATL(CIR)		386	390
CRB	MPM 2 L4(FEL/PAN/NRI)	2 CCR	435	577
CRB	MPM 2 L4(FEL/NRI)		439	551
CRB	SPM 1 L4/TRA(H)*		489	80
CRB	SPM 2 L3/TRA/SOL(REP)		510	152
CRB	MPM 1 ATL/RB(CIR)		557	403
CRB	MPM 1 L4/AS(OVL)		561	328
CRC	MPM 1 L3(FP+/SRE)	2 CCR	334	271
CRI	SPM 1 L3/CON(EFF)		240	27
CRI	SPM 1 L3/CON(EFF)		243	18
CRI	SPM 2 L3/TRA/OFR(AVI)		270	92
CRI	SPM 2 L3/TRA/OFR(BOX)		280	134
CRI	MPM 2 PE/BIC(REP/CIR)		473	637
CRM	SPM 1 L3/CON(EFF)		236	31
CRM	SPM 1 L3/CON(GEO)		237	5
CRM	SPM 1 L3/TRA(K)		264	72
CRM	SPM 2 L3/TRA/OFR(AVI)		269	88
CRM	SPM 2 L3/TRA/OFR(REP)		274	135
CRM	SPM 2 L3/TRA/OFR(FEL)		282	120
CRM	MPM 1 L3(REC/NRI)		306	217
CRM	MPM 1 L3(OVL)	3 CCR	312	199
CRM	MPM 1 L3(SRE)	3 CCR	313	193
CRM	MPM 1 L3(SRE)	3 CCR	314	192
CRM	MPM 1 L3(FP+/SRE)*	1 CCR	323	268
CRM	MPM 1 L3(FP+/SRE)	2 CCR	336	266
CRM	MPM 1 L3(FP+/SRE)	2 CCR	338	269
CRM	MPM 1 L3(FP+/OVL)		344	276
CRM	MPM 1 PE/FLL		370	357
CRM	MPM 1 PE/FLS	3 CCR	371	352
CRM	MPM 1 PE/FLS	3 CCR	372	354
CRM	MPM 1 ATL/RB(CIR)		376	408
CRM	MPM 2 L4(REP/LDH/REC)		413	609
CRM	MPM 2 PE/BIC(REP/CIR)		472	636
CRM	MPM 2 AS(REP/OVL)		477	649
CRM	MPM 1 L3(FP+/REC)	2 CCR	539	252
CRM	MPM 2 PE/BIC(REP/CIR)		570	642
DAL	SPM 2 L3/TRA/OFR(AVI)		512	96
DAL	SPM 2 L3/ANG(REP)		517	167
DAL	MPM 2 L4(FEL/DH/OVL)		600	560
DAW	SPM 1 L3/ANG	3 NZ	628	79
DEL	SPM 2 L3/TRA/OFR(CAN)		490	115
DEL	SPM 2 L3/TRA/OFR(CAN)		491	114
DEL	SPM 2 L3/TRA/OFR(CAN)		492	109
DEL	SPM 2 L3/TRA/OFR(REP)		493	144
DEL	SPM 2 L3/TRA/OFR(CAN)		494	112
DEL	SPM 2 L3/TRA/OFR(REP)		496	139
DEL	SPM 2 L3/TRA/OFR(CAN)		498	110

Collection	Metate variety	Prov	ID	Page
DEL	SPM 2 L3/TRA/OFR(FEL)		501	123
DEL	SPM 2 L4/TRA/OFR(BOX)		502	186
DEL	SPM 2 L3/TRA/OFR(FEL)		503	125
DEL	SPM 2 L3/TRA/OFR(FEL)		504	124
DEL	SPM 2 L3/FSL(REP)		508	182
DEL	SPM 2 L3/TRA/OFR(AVI)		511	104
DEL	SPM 2 L3/ANG(REP)		516	166
DEL	MPM 1 L3(FP/SRE)	1 GCH	524	240
DEL	MPM 1 L3(FP/SRE)	1 GCH	525	241
DEL	MPM 1 L3(FP/SRE)	1 GCH	526	243
DEL	MPM 1 L3(FP/SRE)	1 GCH	527	245
DEL	MPM 1 L3(FP/SRE)		529	234
DEL	MPM 1 L3(FP/SRE)	1 GCH	530	242
DEL	MPM 1 L3(FP/SRE)		531	244
DEL	MPM 1 L3(MAR/REC)	1 GCH	532	223
DEL	MPM 1 L3(FP+/REC)		534	254
DEL	MPM 1 L3(FP+/REC)		536	248
DEL	MPM 1 L3(FP+/OVL)		541	277
DEL	MPM 1 L3(MAR/REC)		542	224
DEL	MPM 2 FS/AVI(CIR)		567	643
DEN	SPM 1 L3/CON(EFF)		480	17
DEN	MPM 1 L3(FP+/SRE)		544	257
DEN	MPM 2 L4(FEL/OVL)		589	533
EBS	MPM 2 L4(FEL/PAN/SRE)		615	568
EDI	MPM 2 L4(FEL/NRI)		598	548
FM	MPM 2 L4(ZOO/OVL)		172	625
FM	MPM 2 L4(FEL/OVL)		202	469
GE	MPM 2 L4(FEL/SRE)	1 GCH	169	453
GE	MPM 2 L4(FEL/NRI)		191	549
GEN	SPM 2 L3/ANG(REP)		519	164
HA	MPM 2 L4(FEL/SRE)		168	444
HAR	SPM 1 L3/CON(GEO)	3 GN	230	8
HAR	SPM 1 L3/CON(EFF)	3 GN	231	20
HAR	SPM 1 L3/CON(EFF)	1 GN	232	25
HAR	SPM 1 L3/CON(EFF)	1 GN	233	22
HAR	SPM 1 L3/CON(EFF)	1 GN	234	14
HAR	SPM 1 L3/CON(EFF)	1 GN	235	21
HAR	SPM 1 L3/CON(EFF)	1 GN	245	12
HAR	SPM 1 L3/CON(EFF)	1 GN	246	13
HAR	SPM 1 L3/CON(EFF)	1 GN	247	19
HAR	SPM 1 L3/CON(EFF)	1 GN	248	16
HAR	SPM 1 L3/CON(EFF)	1 GN	249	26
HAR	SPM 1 L3/CON(EFF)	3 GN	250	24
HAR	SPM 1 L3/TRA(H)	3 GN	251	38
HAR	SPM 1 L3/TRA(H)	1 GN	252	39
HAR	SPM 1 L3/TRA(H)	1 GN	253	50
HAR	SPM 1 L3/TRA(H)	1 GN	254	34
HAR	SPM 2 L3/TRA/OFR(AVI)		275	95
HAR	SPM 2 L3/TRA/OFR(REP)		276	140
HAR	SPM 2 L3/TRA/SOL(AVI)		277	147

Collection	Metate variety	Prov	ID	Page
HAR	SPM 2 L3/TRA/OFR(FEL)		278	119
HAR	MPM 1 PE/DRU	2 CCR	554	364
HAR	MPM 1 PE/DRU	2 CCR	555	365
HOU	SPM 2 L3/TRA/OFR(CAN)		640	116
HUD	SPM 2 L3/ANG(REP)		368	163
HUD	MPM 2 L4(FEL/PAN/SRE)		373	570
ICH	MPM 1 L3(FP/SRE)	1 CPA	343	236
ICH	MPM 1 L4(SRE)*	3 CPA	347	286
JIA	MPM 1 L3(FP+/SRE)	2 CCR	324	275
JIA	MPM 1 FS/RB(CIR)		380	378
JIM	SPM 2 L3/TRA/OFR(REP)		283	142
JIM	SPM 2 L3/TRA/OFR(CAN)		284	118
JIM	SPM 2 L3/TRA/OFR(CAN)		289	117
JIM	SPM 2 L3/TRA/OFR(REP)		298	143
LAC	MPM 2 L4(FEL/OVL)		571	524
LAN	SPM 1 L3/TRA(H)		481	61
LAN	MPM 1 ATL/RB(CIR)		560	405
LAN	MPM 2 L4(FEL/OVL)		604	527
LAN	MPM 2 L4(FEL/OVL)		605	523
LAN	MPM 2 L4(FEL/SRE)		606	456
LDM	SPM 2 L3/TRA/OFR(BOX)		505	127
LIV	SPM 2 L3/ANG(REP)		302	156
LO	SPM 2 L3/TRA/OFR(AVI)		271	100
LOT	MPM 1 L3(FP/SRE)	2 GCh	341	238
LOT	MPM 1 L3(FP/SRE)	2 GCh	342	235
LOT	MPM 2 L4(ZOO/DH/OVL)	3 CPA	393	633
LOU	MPM 2 L4(REP/PDH/NRI)		415	607
MA	SPM 1 L3/TRA(K)		12	73
MA	SPM 1 L3/TRA(H)		13	33
MA	SPM 1 L3/TRA(H)		14	41
MA	SPM 2 L3/TRA/OFR(AVI)		30	89
MA	SPM 2 L3/TRA/OFR(ZOO)		40	145
MA	MPM 1 L3(MAR/SRE)		60	231
MA	MPM 1 L3(REC)		63	190
MA	MPM 1 L4(SUR/OVL)		84	296
MA	MPM 1 L4/AS(SUR/OVL)		130	331
MA	MPM 2 L4(FEL/REC)		133	425
MA	MPM 2 L4(FEL/REC)		141	418
MA	MPM 2 L4(FEL/OVL)		174	472
MA	MPM 2 L4(FEL/OVL)		176	511
MA	MPM 2 L4(FEL/SRE)		193	442
MA	MPM 2 PE/BIC(REP/CIR)		224	640
MAC	MPM 1 L4(CIR)*	1 GCh	362	291
MAC	MPM 1 PE/FLS	1 GCh	365	345
MAC	MPM 1 PE/FLS	1 GCh	366	339
MAC	MPM 1 ATL/RB(CIR)	1 GCh	375	399
MAC	MPM 1 ATL/RB(CIR)	1 GCh	378	400
MAC	MPM 2 L4(FEL/OVL)	1 GCh	403	519
MAC	MPM 2 L4(FEL/OVL)	1 GCh	404	535
MAC	MPM 2 L4(REP/OVL)	1 GCh	405	597

Collection	Metate variety	Prov	ID	Page
MAN	SPM 2 L3/FSL(REP)		299	179
MAN	MPM 1 L4/AS(SUR/OVL)		352	330
MAN	MPM 2 L4(FEL/OVL)		457	479
MAR	MPM 2 L4(FEL/REC)		424	435
MAS	MPM 1 L3(REC)	2 CCR	309	189
MAS	MPM 1 L3(REC)	2 CCR	310	188
MAS	MPM 1 L3(OVL)	2 CCR	311	197
MAS	MPM 1 L3(SRE)	2 CCR	315	195
MAS	MPM 1 L4(NRI)*	3 CCR	346	292
MAS	MPM 1 L4/AS(SUR/OVL)	3 CCR	351	332
MAS	MPM 1 L4(SUR/OVL)	3 CCR	354	300
MAS	MPM 1 L4(SUR/OVL)	3 CCR	355	293
MAS	MPM 1 L4/HS(SUR/OVL)	3 CCR	356	327
MAS	MPM 1 L4(PAN/OVL)*	3 CCR	357	314
MAS	MPM 1 L4(SUR/PAN/OVL)	3 CCR	358	312
MAS	MPM 1 L4(SUR/PAN/OVL)	3 CCR	359	309
MAS	MPM 1 L4(SUR/PAN/OVL)	3 CCR	360	313
MAS	MPM 1 L4(SUR/PAN/OVL)	3 CCR	361	311
MAS	MPM 1 L4(OVL)	3 CCR	363	287
MAS	MPM 1 PE/FLL*	3 CCR	367	359
MAS	MPM 1 PE/FLS	3 CCR	369	353
MAS	MPM 1 ATL/RB(CIR)	3 CCR	377	395
MAS	MPM 1 ATL(CIR)	3 CCR	384	387
MAS	MPM 1 ATL(CIR)	3 CCR	385	385
MAS	MPM 1 FS(REC)	3 CCR	389	368
MAS	MPM 1 FS(REC)	3 CCR	390	367
MAS	MPM 1 FS(REC)	3 CCR	391	369
MAS	MPM 2 L4(REP/OVL)	3 CCR	395	599
MAS	MPM 2 L4(FEL/CIR)	3 CCR	396	546
MAS	MPM 2 L4(FEL/OVL)		400	526
MAS	MPM 2 L4(FEL/CIR)	3 CCR	406	545
MAS	MPM 2 L4(FEL/OVL)		407	512
MAS	MPM 2 L4(FEL/PAN/OVL)	3 CCR	409	571
MAS	MPM 2 L4(FEL/LOO/OVL)	3 CCR	410	584
MAS	MPM 2 L4(REP/LDH/OVL)	3 CCR	411	617
MAS	MPM 2 L4(FEL/OVL)		414	498
MAS	MPM 2 L4(REP/DH/NRI)	3 CCR	416	604
MAS	MPM 2 L4(FEL/DH/NRI)	3 CCR	417	565
MAS	MPM 2 L4(FEL/DH/CIR)	3 CCR	419	562
MAS	MPM 2 L4(FEL/DH/CIR)	3 CCR	420	563
MAS	MPM 2 L4(REP/DH/OVL)	3 CCR	421	600
MAS	MPM 2 L4(FEL/REC)	3 CCR	425	411
MAS	MPM 2 L4(FEL/REC)	3 CCR	426	413
MAS	MPM 2 L4(FEL/REC)		429	431
MAS	MPM 2 L4(FEL/REC)	3 CCR	430	440
MAS	MPM 2 L4(FEL/PAN/NRI)	3 CCR	433	576
MAS	MPM 2 L4(REP/PAN/NRI)	3 CCR	434	606
MAS	MPM 2 L4(FEL/NRI)	3 CCR	436	552
MAS	MPM 2 L4(FEL/NRI)	3 CCR	437	554
MAS	MPM 2 L4(REP/OVL)	3 CCR	441	592

Collection	Metate variety	Prov	ID	Page
MAS	MPM 2 L4(FEL/PAN/REC)	3 CCR	445	567
MAS	MPM 2 L4(FEL/OVL)	3 CCR	447	491
MAS	MPM 2 L4(FEL/PAN/CIR)	3 CCR	450	573
MAS	MPM 2 L4(FEL/PAN/CIR)	3 CCR	451	574
MAS	MPM 2 L4(FEL/OVL)	3 CCR	452	489
MAS	MPM 2 L4(FEL/OVL)		459	513
MAS	MPM 2 L4(REP/OVL)	3 CCR	460	587
MAS	MPM 2 L4(FEL/CIR)	3 CCR	461	543
MAS	MPM 2 L4(FEL/OVL)	3 CCR	462	494
MAS	MPM 2 L4(FEL/CIR)	3 CCR	463	540
MAS	MPM 2 L4(FEL/CIR)	3 CCR	464	538
MAS	MPM 2 L4(FEL/CIR)	3 CCR	465	542
MAS	MPM 2 L4(FEL/CIR)	3 CCR	466	541
MAS	MPM 2 L4(FEL/CIR)	3 CCR	467	539
MAS	MPM 2 L4(FEL/OVL)		468	467
MAS	MPM 2 L4(FEL/OVL)	3 CCR	469	520
MAS	MPM 2 L4(FEL/SRE)		471	455
MAS	MPM 2 FS/AVI(CIR)	2 CCR	565	644
MET	MPM 1 L3(FP+/SRE)	2 CCR	330	267
MET	SPM 1 L3/TRA(H)		486	47
MET	SPM 2 L3/TRA/OFR(AVI)		515	93
MNI	MPM 2 FS/SIM(CIR)		568	646
MON	MPM 2 L4(ZOO/OVL)		573	630
MON	MPM 2 L4(ZOO/SRE)		574	621
MVM	SPM 2 L3/TRA/OFR(AVI)	1 GN	31	97
MVM	SPM 1 L3/CON(EFF)*		48	23
MVM	MPM 1 L3(OVL)*	1 CCR	50	204
MVM	MPM 1 L3(CIR)		70	213
MVM	MPM 1 L4(SUR/OVL)	1 CCR	82	298
MVM	MPM 1 PE/FLS		91	338
MVM	MPM 2 L4(FEL/REC)		140	434
MVM	MPM 2 L4(FEL/OVL)	1 CCR	156	503
MVM	MPM 2 L4(FEL/SRE)		164	465
MVM	MPM 2 L4(FEL/OVL)		179	492
MVM	MPM 2 L4(FEL/OVL)		189	480
MVM	MPM 2 L4(FEL/DH/OVL)		204	561
MVM	MPM 2 PE/BIC(REP/CIR)		225	639
MVM	MPM 2 AS(REP/OVL)	2 CCR	229	650
NOT	SPM 2 L3/ANG(REP)		478	158
NU	MPM 1 L3(REC/NRI)		46	216
NU	MPM 1 L3/EFF(SRE)		54	281
NU	MPM 1 L3/EFF(SRE)		55	283
NU	MPM 1 L4(SUR/OVL)		81	302
NU	MPM 1 PE/ODD*		98	334
NU	MPM 1 FS/RB(CIR)	2 CCR	120	377
NU	MPM 1 FS/RB(CIR)	2 CCR	121	375
NU	MPM 1 ATL(REC)*		124	382
NU	MPM 2 L4(FEL/OVL)		183	486
NU	MPM 2 L4(FEL/OVL)		185	475
NYA	SPM 2 L3/TRA/OFR(AVI)		28	94

Collection	Metate variety	Prov	ID	Page
NYA	SPM 2 L3/TRA/OFR(CAN)		33	105
NYA	SPM 2 L3/TRA/OFR(BOX)		39	130
NYA	SPM 2 L3/ANG(REP)	1 NZ	42	168
NYA	SPM 2 L4/TRA/OFR(BOX)	1 GN	44	184
NYA	MPM 1 L3(FP/SRE)		56	237
NYA	MPM 1 L3(MAR/SRE)		58	230
NYA	MPM 1 L3(MAR/SRE)		59	228
NYA	MPM 1 L3(MAR/SRE)		62	225
NYA	MPM 1 L3(CIR)		72	215
NYA	MPM 1 L4(OVL)		76	290
NYA	MPM 1 L4(SUR/OVL)	1 CCR	78	295
NYA	MPM 1 L4(SUR/OVL)		79	299
NYA	MPM 1 PE/FLS		96	343
NYA	MPM 1 PE/FLS	1 GCH	102	344
NYA	MPM 1 FS/RB(CIR)		115	379
NYA	MPM 1 ATL(CIR)		126	388
NYA	MPM 2 L4(FEL/SRE)		160	462
NYA	MPM 2 L4(FEL/SRE)	2 CCR	166	461
NYA	MPM 2 L4(FEL/SRE)		182	450
NYA	MPM 2 L4(FEL/OVL)		184	478
NYA	MPM 2 L4(FEL/OVL)		203	473
NYA	MPM 2 L4(REP/LDH/SRE)		207	613
NYA	MPM 2 L4(REP/DH/NRI)	2 CCR	217	603
NYA	SPM 2 L3/TRA/OFR(REP)	1 GN	506	141
NYA	MPM 1 L3(OVL)	1 GCH	522	206
NYA	MPM 1 L3(FP+/SRE)*	2 CCR	533	258
NYA	MPM 1 ATL/RB(CIR)	2 CCR	556	401
NYB	SPM 1 L3/CON(GEO)		4	11
NYB	MPM 1 L3(FP+/SRE)		52	262
NYB	MPM 1 PE/FLS	3 CCR	94	351
NYB	MPM 1 PE/DRU	3 CCR	105	363
NYB	MPM 2 L4(FEL/LOO/OVL)	3 CCR	143	583
NYB	MPM 2 L4(REP/OVL)	3 CCR	155	598
NYB	MPM 2 L4(FEL/OVL)	3 CCR	175	505
NYB	MPM 1 ATL/RB(CIR)	3 CCR	374	409
ODU	SPM 2 L3/TRA/OFR(CAN)		497	111
ODU	SPM 2 L3/TRA/OFR(CAN)		499	113
ODU	MPM 2 L4(FEL/OVL)		603	536
ORL	MPM 1 L3(FP+/SRE)		337	272
PA	SPM 2 L3/TRA/SOL(ZOO)		41	153
PA	MPM 1 L3(MAR/REC)		57	219
PA	MPM 1 L3(MAR/SRE)	1 CCR	61	229
PA	MPM 1 L3(OVL)		64	205
PA	MPM 1 L3(CIR)		69	208
PA	MPM 1 L4(OVL)		75	289
PA	MPM 1 L4(SUR/OVL)	2 CCR	83	305
PA	MPM 1 L4/HS(OVL)		88	318
PA	MPM 1 PE/FL*		99	337
PA	MPM 1 PE/FLS		103	342
PA	MPM 1 L4(PAN/NRI)*		108	315

Collection	Metate variety	Prov	ID	Page
PA	MPM 1 ATL(CIR)		132	386
PA	MPM 2 L4(FEL/REC)		135	421
PA	MPM 2 L4(FEL/REC)		136	410
PA	MPM 2 L4(FEL/SRE)	1 GCH	161	459
PA	MPM 2 L4(FEL/SRE)		181	445
PA	MPM 2 L4(FEL/NRI)		192	547
PA	MPM 2 L4(ZOO/OVL)		200	623
PA	MPM 2 L4(ZOO/LDH/OVL)		210	634
PA	MPM 2 L4(ZOO/OVL)		216	624
PAE	SPM 1 L3/CON(EFF)	1 GN	239	30
PAE	SPM 1 L3/CON(EFF)	1 GN	244	15
PAE	SPM 2 L3/TRA/OFR(REP)	1 GN	286	136
PAN	MPM 1 L3(PRO/SRE)	2 GCh	339	279
PAN	MPM 1 L3(FP/SRE)*	2 GCh	340	239
PAN	MPM 1 ATL/RB(CIR)	1 GCh	381	407
PAN	MPM 2 L4(FEL/OVL)		453	530
PAN	MPM 2 L4(FEL/OVL)		455	518
PAN	MPM 2 L4(REP/OVL)		456	596
PAN	MPM 1 L3(FP/SRE)		528	246
PAN	MPM 1 PE/FLS		551	349
PAN	MPM 2 L4(FEL/DH/OVL)	1 GCH	590	558
PEA	MPM 2 L4(FEL/PAN/CIR)		449	572
PEN	SPM 2 L4/TRA/OFR(BOX)	1 GN	639	185
PRI	MPM 1 PE/FLS		552	347
PRI	MPM 1 PE/FLS		553	346
PRI	MPM 2 L4(FEL/OVL)		597	521
PUM	SPM 2 L3/ANG(REP)	1 NZ	43	171
PUM	MPM 1 L4/HS(OVL)	1 CCR	549	319
PUM	MPM 1 L4/HS(OVL)	1 CCR	550	322
PUM	MPM 2 L4(FEL/OVL)	CCR	588	499
PUM	MPM 1 L4/HS(SUR/OVL)		629	325
RAB	MPM 1 L3(FP+/REC)		535	249
RAB	MPM 1 L3(FP+/REC)		537	255
RAB	MPM 1 ATL/RB(CIR)		558	404
RAB	MPM 1 ATL/RB(CIR)		559	402
RAB	MPM 2 FS/SIM(CIR)		566	645
RAB	MPM 2 L4(FEL/OVL)		578	508
RAB	MPM 2 L4(FEL/REC)		581	439
RAB	MPM 2 L4(FEL/REC)		582	430
RAB	MPM 2 L4(FEL/DH/REC)		583	555
RAB	MPM 2 L4(FEL/DH/REC)		584	556
RIM	SPM 1 L3/TRA(H)		483	45
RIM	SPM 2 L3/TRA/OFR(BOX)		507	126
RIM	MPM 1 L3(FP+/SRE)*		540	260
ROM	SPM 2 L3/ANG(REP)		608	154
ROM	SPM 2 L3/CON(FEL)	GN	609	82
ROM	SPM 2 L3/TRA/SOL(FEL)	1 GN	610	151
ROM	SPM 1 L3/TRA(H)	GN	611	35
ROM	SPM 1 L3/TRA(K)		612	69
ROM	SPM 1 L3/TRA(H)*	GN	613	40

Collection	Metate variety	Prov	ID	Page
ROM	MPM 2 L4(FEL/OVL)		614	496
RVL	SPM 1 L3/TRA(H)		11	42
RVL	MPM 2 L4(FEL/OVL)		157	504
RVL	MPM 2 L4(FEL/OVL)		199	483
SAN	SPM 2 L3/FSL(FEL)		295	176
SAN	MPM 1 L3(FP+/SRE)		325	274
SCR	MPM 1 ATL(CIR)		387	391
SFR	SPM 1 L3/TRA(H)		485	60
SFR	MPM 2 L4(FEL/REC)		602	433
SMI	MPM 2 L4(FEL/REC)		427	414
SMI	MPM 2 L4(FEL/SRE)	1 GCh	454	449
SMI	SPM 1 L3/TRA(H)		484	57
SMI	SPM 2 L3/TRA/OFR(CAN)		500	108
SMI	SPM 2 L3/TRA/SOL(AVI)	3 NZ	514	148
SMI	MPM 1 L3(OVL)	3 CCR	520	202
SMI	MPM 1 L3(CIR)	3 CCR	521	212
SMI	MPM 1 L3/EFF(SRE)	3 CCR	523	284
SMI	MPM 1 L3(PRO/SRE)	3 CPA	543	278
SMI	SPM 2 L4/TRA/OFR(AVI)	3 NZ	545	183
SMI	MPM 1 L4(SUR/OVL)*		547	306
SMI	MPM 1 L4(SUR/OVL)	3 CCR	548	301
SNA	MPM 1 L3(SRE)	3 CCR	285	191
SNA	MPM 2 L4(ZOO/OVL)	3 CCR	287	628
SNA	MPM 1 L3(CIR)	3 CCR	307	214
SOT	SPM 1 L3/CON(EFF)		238	29
SOT	SPM 1 L3/TRA(H)		257	67
SOT	SPM 1 L3/TRA(H)		259	58
SOT	SPM 1 L3/TRA(H)		260	51
SOT	SPM 1 L3/TRA(H)		263	68
SOT	SPM 2 L3/TRA/OFR(AVI)		266	90
SOT	SPM 2 L3/TRA/OFR(AVI)		272	98
SOT	SPM 2 L3/TRA/OFR(BOX)		279	132
SOT	SPM 2 L3/TRA/OFR(FEL)		292	121
SOT	SPM 2 L3/FSL(FEL)		294	177
SOT	SPM 2 L3/FSL(CAN)		296	172
SOT	SPM 2 L3/ANG(REP)		301	161
SOT	MPM 1 L3(MAR/SRE)		317	227
SOT	MPM 1 L3(FP+/SRE)		326	261
SOT	MPM 1 L3(FP+/SRE)		327	265
SOT	MPM 1 L3(FP+/REC)		333	253
SOT	MPM 1 L3(FP+/REC)		335	250
SOT	MPM 1 L4/HS(SUR/OVL)		350	326
SOT	MPM 1 PE/FLS		364	341
SOT	MPM 1 ATL/RB(CIR)		379	406
SOT	MPM 1 ATL(CIR)		388	389
SOT	MPM 2 L4(FEL/SRE)		392	466
SOT	MPM 2 L4(FEL/OVL)		394	528
SOT	MPM 2 L4(FEL/OVL)		401	529
SOT	MPM 2 L4(FEL/DH/NRI)		418	564
SOT	MPM 2 L4(FEL/NRI)		440	553

Collection	Metate variety	Prov	ID	Page
SOT	MPM 2 L4(FEL/SRE)		446	457
SOT	MPM 2 AS(AVI/OVL)*		476	647
SOT	SPM 1 L3/TRA(H)		572	48
SOT	MPM 2 L4(FEL/PDH/NRI)		587	581
SOT	MPM 2 L4(REP/PAN/OVL)		601	605
SOT	MPM 1 L3(FP+/REC)		630	247
SOT	MPM 1 ATL/RB(CIR)		631	394
SOT	SPM 2 L3/ANG(REP)		632	162
STO	SPM 2 L3/CON(ZOO)	1 NZ	49	83
STO	SPM 1 L3/CON(EFF)	1 GN	241	28
STO	SPM 2 L3/ANG(REP)	1 NZ	300	160
STO	SPM 2 L3/ANG(REP)	2 NZ	303	155
STO	SPM 2 L3/ANG(REP)	2 NZ	304	157
STO	SPM 2 L3/TRA/SOL(FEL)	1 GN	305	150
STO	MPM 1 L3(MAR/CIR)		308	232
STO	MPM 1 L3(SRE)		316	196
STO	MPM 1 L3(MAR/SRE)		318	226
STO	MPM 1 L3(MAR/REC)		320	220
STO	MPM 1 L3(MAR/REC)		321	221
STO	MPM 1 L3(FP+/REC)		331	256
STO	MPM 1 FS/RB(CIR)*		382	380
STO	MPM 2 L4(FEL/PAN/NRI)		432	578
STO	MPM 2 L4(FEL/NRI)		438	550
STO	MPM 2 L4(REP/SRE)*		443	586
STO	MPM 2 L4(FEL/PAN/CIR)		448	575
STO	MPM 2 L4(FEL/OVL)		458	515
STO	MPM 2 PE/BIC(REP/CIR)		474	638
STO	MPM 2 L4(REP/OVL)		569	595
STO	MPM 2 L4(REP/DH/OVL)		617	601
STO	SPM 2 L3/ANG(REP)	2 NZ	638	165
STO	MPM 1 L3(PRO/OVL)		641	280
STO	MPM 2 L4(ANT/CIR)		642	620
STO	MPM 2 L4(FEL/REC)		643	420
THR	SPM 2 L3/ANG(REP)		518	170
TUL	SPM 1 L3/TRA(H)	2 GN	487	63
TUL	SPM 1 L3/TRA(K)	2 GN	488	76
TUL	SPM 2 L3/TRA/OFR(AVI)		513	101
TUL	SPM 2 L3/CON(AVI)	1 NZ	575	81
TUL	MPM 1 L4(SUR/OVL)	1 CCR	644	297
TUL	MPM 1 L3(OVL)	1 CCR	645	200
TUL	SPM 2 L3/TRA/OFR(BOX)		646	128
VEL	SPM 2 L3/TRA/OFR(REP)		290	137
VEL	SPM 2 L3/TRA/OFR(CAN)		291	106
VEL	MPM 2 L4(FEL/OVL)	1 CCR	398	488
VI	SPM 2 L3/TRA/SOL(FEL)	1 GN	607	149
VIN	SPM 1 L3/TRA	3 GN	242	78
VIN	SPM 1 L3/TRA(H)	2 GN	262	64
VMB	MPM 1 L4(OVL)		546	288
VMB	MPM 2 L4(FEL/REC)	1 GCH	592	417
VVM	MPM 1 PE/FLS	2 CCR	100	340

Collection	Metate variety	Prov	ID	Page
VVM	MPM 1 PE/FLL	2 CCR	101	358
VVM	MPM 1 FS/RB(CIR)	2 CCR	114	381
VVM	MPM 1 ATL/RB(CIR)	2 CCR	116	398
VVM	MPM 1 ATL/RB(CIR)	2 CCR	119	392
VVM	MPM 2 L4(FEL/REC)	2 CCR	138	422
VVM	MPM 2 L4(FEL/REC)	2 CCR	139	416
VVM	MPM 2 L4(FEL/LOO/OVL)	2 CCR	142	582
VVM	MPM 2 L4(FEL/OVL)	2 CCR	145	481
VVM	MPM 2 L4(FEL/OVL)	2 CCR	153	510
VVM	MPM 2 L4(FEL/SRE)	2 CCR	162	446
VVM	MPM 2 L4(FEL/SRE)		163	463
VVM	MPM 2 L4(FEL/OVL)	2 CCR	173	497
VVM	MPM 2 L4(FEL/OVL)	2 CCR	178	493
VVM	MPM 2 L4(FEL/SRE)	2 CCR	186	454
VVM	MPM 2 L4(FEL/OVL)	2 CCR	188	477
VVM	MPM 2 L4(FEL/OVL)	2 CCR	196	468
VVM	MPM 2 L4(ZOO/OVL)	2 CCR	219	627
VVM	MPM 2 L4(REP/REC)	3 CCR	594	585
WEL	MPM 2 L4(FEL/REC)		137	412
WEL	MPM 2 L4(FEL/SRE)		201	441
ZH	SPM 1 L3/CON(GEO)		2	7
ZH	SPM 1 L3/CON(GEO)		3	9
ZH	SPM 1 L3/TRA(H)		5	46
ZH	SPM 1 L3/TRA(H)		7	36
ZH	SPM 2 L3/TRA/OFR(AVI)		25	99
ZH	SPM 2 L3/TRA/OFR(AVI)		29	86
ZH	SPM 2 L3/FSL(REP)		32	180
ZH	SPM 2 L3/ANG(REP)*		34	159
ZH	SPM 2 L3/TRA/OFR(REP)		35	138
ZH	MPM 1 L3(REC/NRI)		47	218
ZH	MPM 1 L3(FP+/REC)		51	251
ZH	MPM 1 L3/EFF(SRE)		53	285
ZH	MPM 1 L3(SRE)		65	194
ZH	MPM 2 L4(FEL/OVL)		158	506
ZH	MPM 2 L4(REP/LDH/SRE)		212	614
ZHB	SPM 1 L3/TRA(H)		9	52
ZHB	SPM 1 L3/TRA(H)		10	66
ZHB	MPM 1 L3(CIR)		68	211
ZHB	MPM 1 PE/FLL*		106	355
ZHB	MPM 1 PE/BIC		109	360
ZHB	MPM 2 L4(ZOO/OVL)		152	622
ZHB	MPM 2 L4(FEL/OVL)		197	471
ZHB	MPM 2 L4(REP/OVL)		198	590
ZHB	MPM 2 L4(REP/LDH/SRE)		206	612
ZHB	MPM 2 L4(REP/LDH/SRE)		213	616
ZHR	SPM 2 L3/FSL(FEL)	1 GN	293	178
ZHV	MPM 2 L4(FEL/OVL)		408	522

APPENDIX 6

METATE GLOSSARY

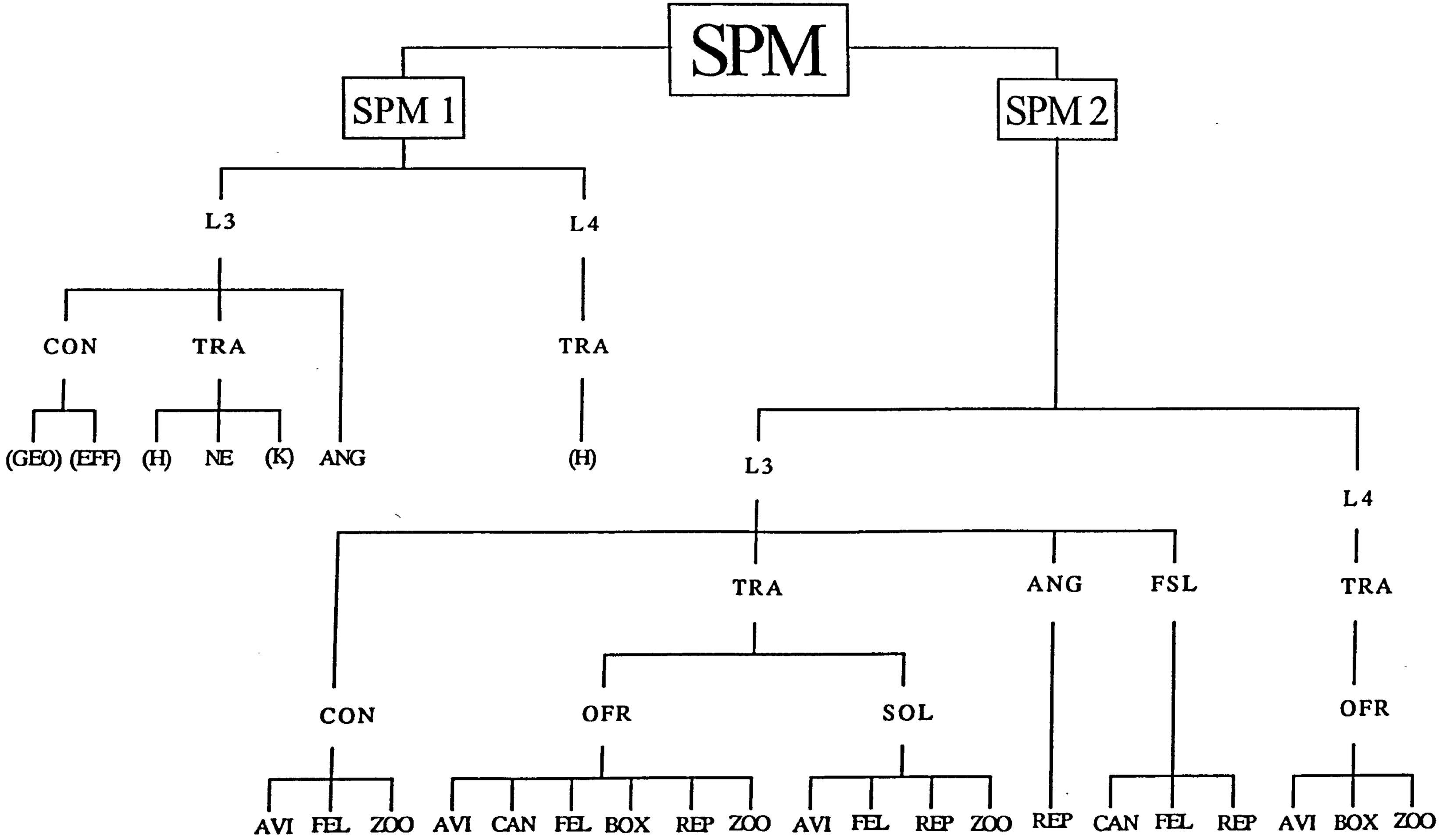
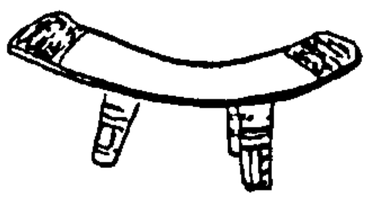


Fig. 27. SPM metate tree

SPM1 = SPECIAL PURPOSE METATE (non-effigy)



SPM1.L3/CON(GEO)

3 conical legs; geometric decoration on underside of grinding plate

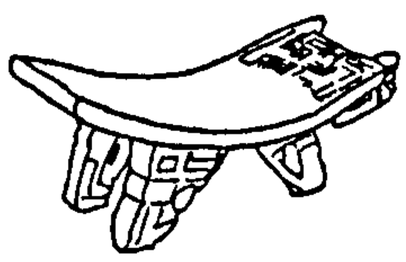
SPM1.L3/CON(EFF)

3 conical legs; effigies carved into underside of grinding plate

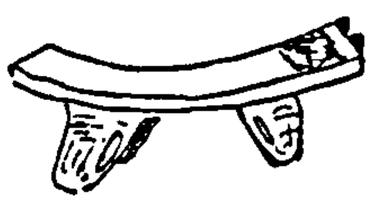
SPM1.L3/TRA

3 legs, trapezoidally shaped

SPM1.L3/TRA(H)



3 legs, trapezoidally shaped; 2 handle-like appendages at front end



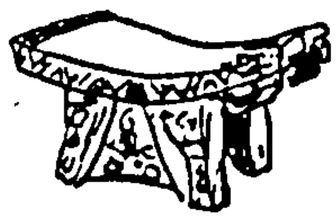
SPM1.L3/TRA(K)

3 legs, trapezoidally shaped; 2 large knobs at front end

SPM1.L3/ANG

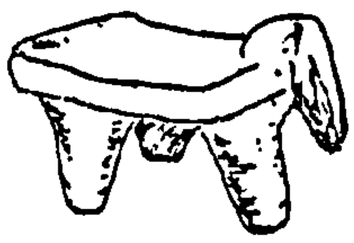
3 angular legs

SPM1.L4/TRA(H)



4 legs, trapezoidally shaped; 2 handle- like appendages at front end

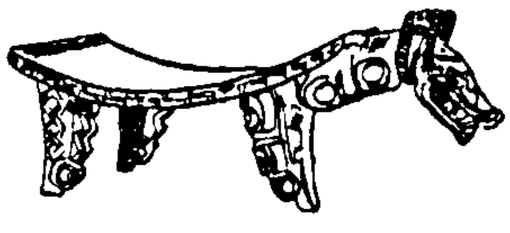
SPM2 = SPECIAL PURPOSE METATE (effigy)



SPM2.L3/CON(AVI) — 3 conical legs; avian effigy

SPM2.L3/CON(FEL) — as above, but feline effigy

SPM2.L3/CON(ZOO) — as above, but unidentified zoomorphic effigy



SPM2.L3/TRA/OFR(AVI) — 3 legs, trapezoidally shaped and carved in open fretwork fashion; avian effigy

SPM2.L3/TRA/OFR(CAN) — as above, but canid effigy

SPM2.L3/TRA/OFR(FEL) — as above, but feline effigy

SPM2.L3/TRA/OFR(BOX) — as above, but with box-shaped head

SPM2.L3/TRA/OFR(REP) — as above, but reptilian effigy

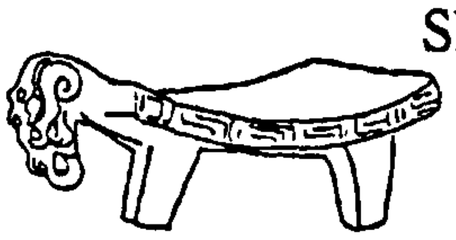
SPM2.L3/TRA/OFR(ZOO) — as above, but unidentified zoomorphic effigy

SPM2.L3/TRA/SOL(AVI) — 3 legs, trapezoidally shaped and solid; avian effigy

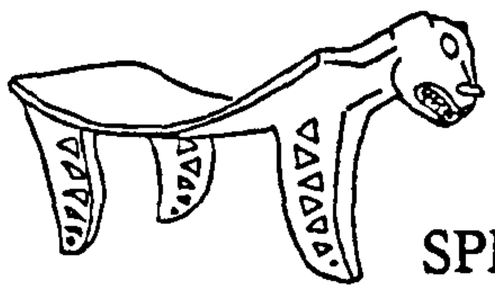
SPM2.L3/TRA/SOL(FEL) — as above, but feline effigy

SPM2.L3/TRA/SOL(REP) — as above, but reptilian effigy

SPM2.L3/TRA/SOL(ZOO) as above, but unidentified zoomorphic effigy



SPM2.L3/ANG(REP) 3 angularly-shaped legs; reptilian effigy



SPM2.L3/FSL(CAN) 3 legs in form of a tropical fruitslice; canid effigy

SPM2.L3/FSL(FEL) as above, but feline effigy

SPM2.L3/FSL(REP) as above, but reptilian effigy

SPM2.L4/TRA/OFR(AVI) 4 legs, trapezoidally shaped and carved in open fretwork fashion; avian effigy

SPM2.L4/TRA/OFR(BOX) as above, but with box-shaped head

SPM2.L4/TRA/OFR(ZOO) as above, but unidentified zoomorphic effigy

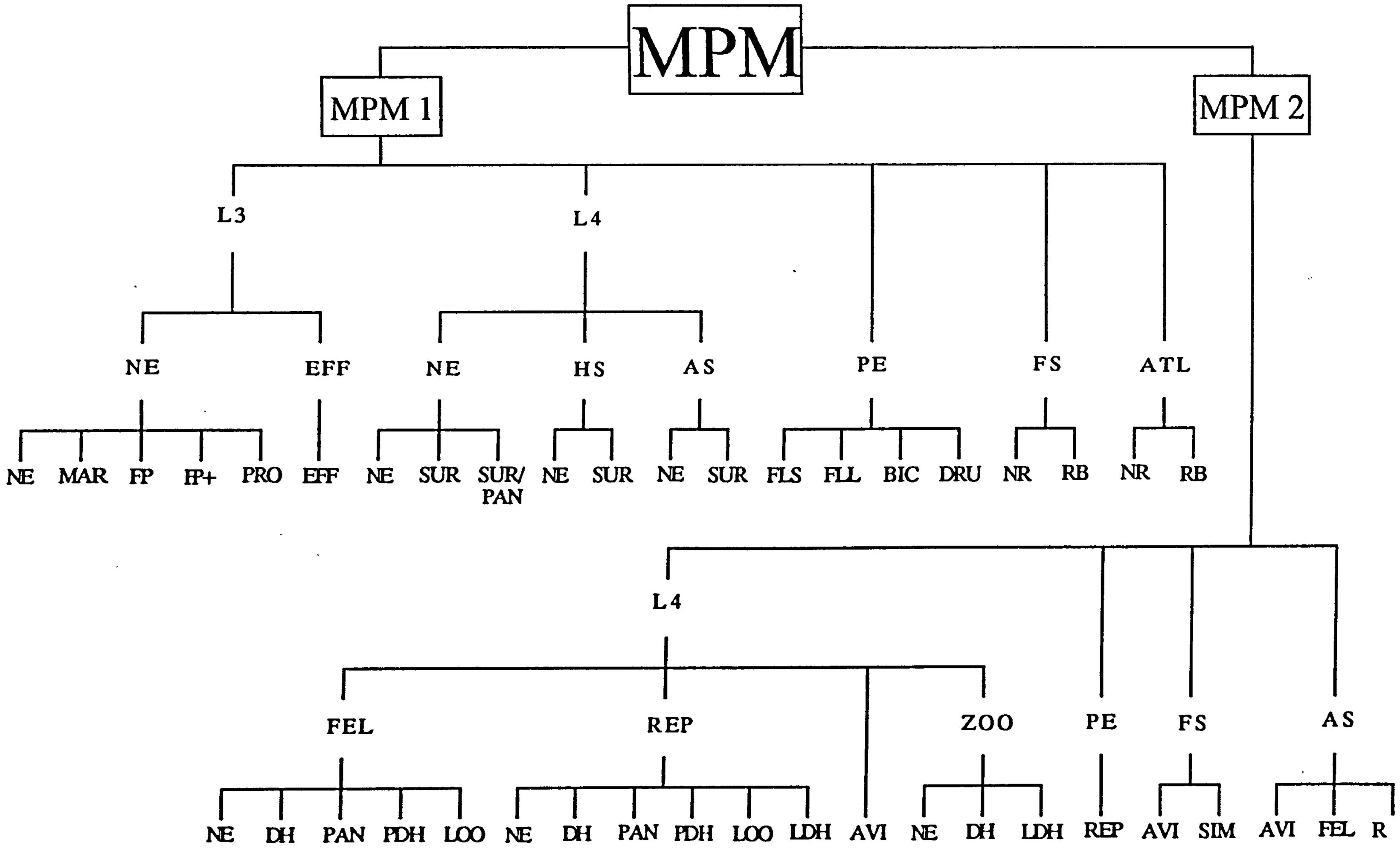
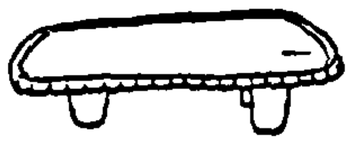


Fig. 28. MPM metate tree

MPM1 = MULTI-PURPOSE METATE (non-effigy)



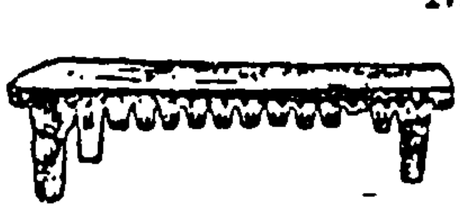
MPM1.L3(REC) — 3 legs; rectangular grinding top

MPM1.L3(SRE) — 3 legs; sub-rectangular grinding top

MPM1.L3(OVL) — 3 legs; oval grinding top

MPM1.L3(CIR) — 3 legs; circular grinding top

MPM1.L3(NRI) — 3 legs; rectangular rimless grinding top



MPM1.L3(MAR/REC) — 3 legs; 'marimba' type, rectangular top

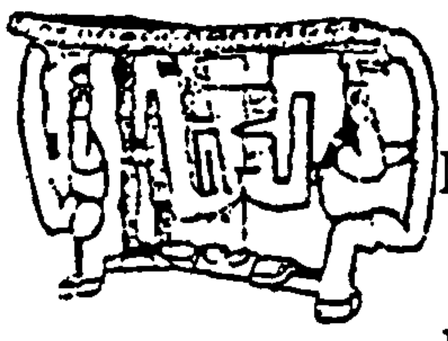
MPM1.L3(MAR/SRE) — as above, but sub-rectangular top

MPM1.L3(MAR/CIR) — as above, but circular top

MPM1.L3(FP/REC) — 3 legs; 'flying-panel', rectangular top

MPM1.L3(FP/SRE) — as above, but sub-rectangular top

MPM1.L3(FP+/REC) — 3 legs; 'flying-panel' plus effigies on legs, rectangular top



MPM1.L3(FP+/SRE) — as above, but sub-rectangular top

MPM1.L3(FP+/OVL) — as above, but oval top

MPM1.L3(PRO/SRE) — 3 legs; protrusions on underside of sub-rectangular grinding top

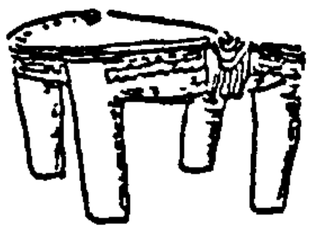
MPM1.L3/EFF(SRE) — 3 legs with effigies carved into them

MPM1.L4(SRE) — 4 legs, sub-rectangular grinding top

MPM1.L4(OVL) — as above, but oval top

MPM1.L4(CIR) — as above, but circular top

MPM1.L4(NRI) — as above, but rimless top



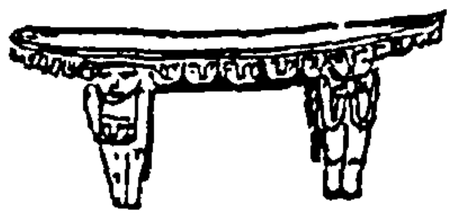
MPM1.L4(SUR/OVL) — 4 legs, oval top with surmounts

MPM1.L4(SUR/PAN/OVL) — as above plus panels between legs

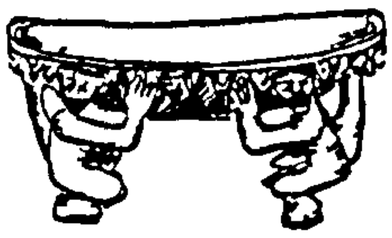
MPM1.L4(PAN/OVL) — 4 legs, oval top, with panel;

MPM1.L4(PAN/NRI) — as above, but rimless rectangular top

MPM1.L4/HS(OVL) — 4 legs in form of human supports; oval top



MPM1.L4/HS(SUR/OVL) — 4 legs in form of human supports; oval top with surmounts

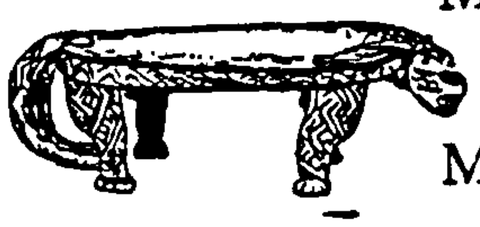


MPM1.L4/AS(OVL) — 4 legs in form of animal supports; oval top

MPM1.L4/AS(CIR) — as above, but circular top

	MPM1.L*4*/AS(SUR/OVL)	4 legs in form of animal supports; oval top with surmounts
	MPM1.PE/FLS	pedestal, flared and slit
	MPM1.PE/FLL	pedestal, flared and latticed
	MPM1.PE/BIC	pedestal in biconical form
	MPM1.PE/DRU	pedestal in form of a drum
	MPM1.FS(REC)	figural-supported, rectangular top
	MPM1.FS(OVL)	as above, but oval top
	MPM1.FS(CIR)	as above, but circular top
	MPM1.FS/RB(CIR)	figural-supported and ring-based, circular top
	MPM1.ATL(REC)	atlantean-supported, rectangular top
	MPM1.ATL(CIR)	as above, but circular top
	MPM1.ATL/RB(CIR)	atlantean-suppported and ring-based, circular top

MPM2 = MULTIPURPOSE METATE (effigy)



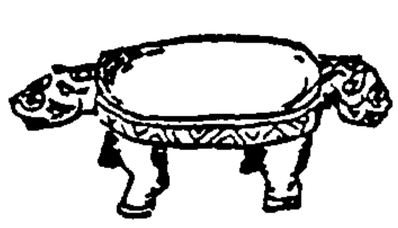
MPM2.L4(FEL/REC) — 4 legs, feline effigy, rectangular top

MPM2.L4(FEL/SRE) — as above, but sub-rectangular top

MPM2.L4(FEL/OVL) — as above, but oval top

MPM2.L4(FEL/CIR) — as above, but circular top

MPM2.L4(FEL/NRI) — as above, but rimless top



MPM2.L4(FEL/DH/REC) — 4 legs, feline effigy, double-headed, rectangular top

MPM2.L4(FEL/DH/OVL) — as above, but oval top

MPM2.L4(FEL/DH/CIR) — as above, but circular top

MPM2.L4(FEL/DH/NRI) — as above, but rimless top

MPM2.L4(FEL/PAN/REC) — 4 legs, feline effigy, plus panels linking legs front and back or sideways, rectangular top

MPM2.L4(FEL/PAN/SRE) — as above, but sub-rectangular top

MPM2.L4(FEL/PAN/OVL) — as above, but oval top

MPM2.L4(FEL/PAN/NRI) — as above, but rimless top

MPM2.L4(FEL/PDH/SRE) 4 legs, feline effigy, panelled and double-headed

MPM2.L4(FEL/PDH/OVL) as above, but oval top

MPM2.L4(FEL/PDH/NRI) as above, but rimless top

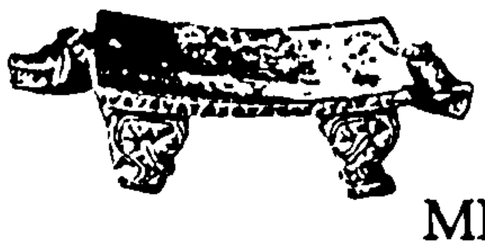
MPM2.L4(FEL/LOO/OVL) 4 legs, feline effigy, looped, oval top

MPM2.L4(REP/REC) 4 legs, reptilian effigy, rectangular top

MPM2.L4(REP/SRE) as above, but sub-rectangular top

MPM2.L4(REP/OVL) as above, but oval top

MPM2.L4(REP/DH/OVL) 4 legs, reptilian effigy, double-headed, oval top



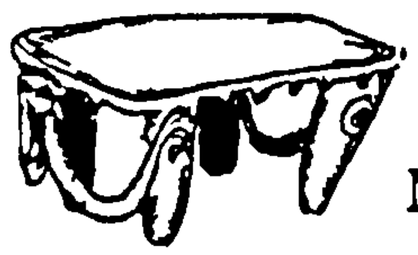
MPM2.L4(REP/DH/NRI) as above, but rimless top

MPM2.L4(REP/PAN/OVL) 4 legs, reptilian effigy, panelled, oval top

MPM2.L4(REP/PAN/NRI) as above, but rimless top

MPM2.L4(REP/PDH/NRI) 4 legs, reptilian effigy, panelled and double-headed, rimless top

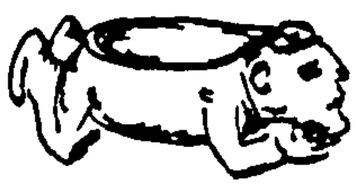
MPM2.L4(REP/LOO/OVL) 4 legs, reptilian effigy, looped, oval top



MPM2.L4(REP/LDH/REC) 4 legs, reptilian effigy, looped and double-headed, rectangular top

MPM2.L4(REP/LDH/SRE) as above, but sub-rectangular top

MPM2.L4(REP/LDH/OVL) as above, but oval top



MPM2.L4(ANT/OVL) 4 legs, anthropomorphic effigy, oval top

MPM2.L4(ZOO/SRE) 4 legs, unidentified zoomorphic effigy, sub-rectangular top

MPM2.L4(ZOO/OVL) as above, but oval top

MPM2.L4(ZOO/CIR) as above, but circular top

MPM2.L4(ZOO/DH/OVL) 4 legs, unidentified zoomorphic effigy, double-headed, oval top

MPM2.L4(ZOO/LDH/OVL) 4 legs, unidentified zoomorphic effigy, looped and double-headed, oval top

MPM2.PE/BIC(REP/CIR) pedestal-based,biconical in form, reptilian effigy, circular top

MPM2.FS/AVI(CIR) figural-supported, avian effigy, circular top

MPM2.FS/SIM(CIR) as above, but simian effigy

MPM2.AS(AVI/OVL) — animal-supported, avian effigy, oval top

MPM2.AS(FEL/OVL) — animal-supported, feline effigy, oval top

MPM2.AS(REP/OVL) — as above, but reptilian effigy

REFERENCES

Accola, R.M. and Ryder, P.R., 1980, Excavaciones en el Sitio Monte del Barco, Bahia Culebra, in Vínculos Vol.6 nos.1-2 (pp.67-79). Museo Nacional de Costa Rica, San José.

Aguilar, C.H., 1953, Retes, un deposito arqueólogico en las faldas de Irazú. Editorial Universitario, San José.

1972, Guayabo de Turrialba. Editorial Costa Rica, San José.

Alcina, J., 1979, Die Kunst des Alten Amerika. Herder, Freiburg im Breisgau.

Andrews, V.E. Wyllys, 1976, The Archaeology of Quelapa, El Salvador, Middle American Research Institute, Publication 41. Tulane University, New Orleans.

Arellano, J.E., 1979, La Colección Squier-Zapatera. Managua.

Balser, C., 1980, Jade Precolombino de Costa Rica. Instituto Nacional de Seguros, San José.

Baquedano, E., 1984, Aztec Sculpture. British Museum, London.

Baudez, C.F., 1966, Niveaux céramiques au Honduras: une réconsideration de l'évolution culturelle, in Journal de la Société des Americanistes 55 (pp.299-342). Paris.

1967, Recherches archéologiques dans la vallée du Tempisque, Guanacaste, Costa Rica, Travaux et Mémoires de l'Institut des Hautes Etudes de l'Amérique Latine, No.18. Centre National de la Recherche Scientifique, Paris.

1970, Central America. Nagel, Geneva.

Benzoni, G., 1962, La Historia del Mondo Nuovo (1572, Venice). Akademische Druck- und Verlagsanstalt, Graz.

Bolz, I., 1975, Sammlung Ludwig Alt-Amerika. Aurel Bongers, Recklinghausen.

Boyle, F., 1866, The Ancient Tombs of Nicaragua, in Archaeological Journal XXIII, 41. London.

1868, A Ride Across a Continent, Vol.1. London.

Bozzoli de Wille, M.E., 1979, El Nacimiento y la Muerte entre los Bribris. Editorial Universidad de Costa Rica, San José.

Bray, W., 1984, Across the Darien Gap: A Colombian View of Isthmian Archaeology, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.305-338). University of New Mexico Press, Albuquerque.

Brizuela, G.C. de, 1972, Investigaciones arqueológicas en la Provincia de Veraguas, in Hombre y Cultura 2 (pp.119-137). Panamá.

Ceballos, Fray Agustín de, 1610, A.S.M.el Rey D. Felipe III, enviándole relación de la descripción y cualidades de la Provincia de Costa Rica, in Costa Rica, Nicaragua y Panama en el Siglo XVI, Peralta M.M. ed. (1883). Murillo, Madrid.

Chenault, M.L., 1984, Ground and Polished Stone from the Cuenca de Arenal, in Vínculos Vol.10, nos.1-2 (pp.167-185). San José.

Clark, C.M., Dawson, F.G. and Drake, J.C., 1983, Archaeology of the Mosquito Coast, Occasional Publication No.4, Centre of Latin American Studies, University of Cambridge.

Coe, M.D., 1962, Costa Rican Archaeology and Mesoamerica, in Southwestern Journal of Anthropology 18 (pp.170-183). University of New Mexico, Albuquerque.

Cook, S., 1973, Stone Tools for Steel-Age Mexicans, in American Anthropologist 75 (pp.1485-1503). Washington D.C.

Cooke, R.G., 1972, The Archaeology of the Western Cocle Province of Panama. Ph.D.dissertation, Institute of Archaeology, University of London.

1976a, El Hombre y la Tierra en el Panamá Prehistórico, in Revista Nacional de Cultura 2 (pp.17-38). Panamá.

1976b, Panama: Region Central, in Vínculos Vol.2 no.1 (pp.122-140). Museo Nacional de Costa Rica, San José.

1979, Los impactos de las comunidades agrícolas precolombinas en los ambientes del Trópico estacional, datos del Panamá prehistórico, in Actas del IV Simposio Internacional de Ecologia Tropical de Panama 3 (pp.917-973). I.N.A.C. Panamá.

1984, Birds and Men in Prehistoric Central Panama, in Recent Developments in Isthmian Archaeology, BAR International Series 212, F.W. Lange ed. (pp.243-281). Oxford.

Cooke, R.G. and Bray W., 1985, The Goldwork of Panama: An Iconographic and Chronological Perspective, in The Art of Precolumbian Gold: The Jan Mitchell Collection, Jones J. ed. (pp.35-49). Weidenfeld and Nicolson, London.

Cooke,R.G. and Ranere, A.J., 1984, The 'Proyecto Santa Maria': a multi-disciplinary analysis of prehistoric adaptations to a tropical watershed in Panama, in Recent Developments in Isthmian Archaeology, BAR International Series 212, F.W. Lange ed. (pp.3-30). Oxford.

Creamer, W. and Haas, J., 1985, Tribe versus Chiefdom in Lower Central America, in American Antiquity 50 (pp.738-754). Washington D.C.

Diaz del Castillo, B., 1632, Historia Verdadera de la Conquista de la Nueva España (Edición crítica 1940). Madrid.

Dockstader, F.J., 1964, Indian Art in Middle America. Greenwich, Conn.

Dorsingfang-Smets, A., 1955, Les Métates de Costa Rica des Musées Royaux d'Art et d'Histoire Bruxelles, in Journal de la Société des Américanistes (pp.131-147). Paris.

Drolet, R.P., 1982, El Asentamiento Cultural en la Costa Arriba. Smithsonian Tropical Research Institute, Panamá.

1988, The Emergence and Intensification of Complex Societies in Pacific Costa Rica, in Costa Rican Art and Archaeology, Lange F.W.ed. (pp.163-188). University of Colorado, Boulder.

Easby, E.K., 1981, Jade, in Precolumbian Art of Costa Rica (pp.135-151). Abrams, New York.

Easby, E.K. and Scott, J.F., 1970, Before Cortés: Sculpture of Middle America. Metropolitan Museum, New York.

Einhaus, C.S., 1980, Stone Tools from La Pitahaya, in Adaptive Radiations in Prehistoric Panama, Linares O.F. and Ranere A.J. eds., Peabody Museum Monographs, no.5 (pp.429-466). Harvard University, Cambridge, Mass.

Emboden, W., 1979, Narcotic Plants. Studio Vista, London.

Ferrero, L., 1977, Costa Rica Precolombina. Editorial Costa Rica, San José.

1981, Ethnohistory and Ethnography in the Central Highlands-Atlantic Watershed and Diquis, in Precolumbian Art of Costa Rica (pp.93-103). Abrams, New York.

Feriz, H., 1959, Ausgrabungen bei Parita, in Zeitschrift fuer Ethnologie, Band 84/1. Braunschweig.

Fernandez de Oviedo y Valdes, G., 1851-55, Historia natural y general de las Indias, islas y tierra firme del mar oceano, 4 vols., Amador de los Rios, J. ed. Madrid.

Fonseca Zamora O. and Richardson J.B., 1978, South American and Mayan Cultural Contacts at the Las Huacas Site, Costa Rica, in Annals of the Carnegie Museum 47 (pp.299-317). Carnegie Museum of Natural History, Pittsburgh.

Graham, M.M., 1981, Traditions of Costa Rican Stone Sculpture, in Precolumbian Art of Costa Rica (pp.113-134). Abrams, New York.

Haberland, W., 1960, Die Steinfiguren von Barriles in Panama, in Die Umschau in Wissenschaft und Technik, Heft 23. Frankfurt a.M.

1971, American Indian Art: A Descriptive Catalogue, Museum Rietberg, Zurich.

1976, Gran Chiriquí, in Vínculos Vol.2 no.1 (pp.115-121). Museo Nacional de Costa Rica, San José.

1984, The Archaeology of Greater Chiriqui, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.233-254). University of New Mexico, Albuquerque.

Hanle, A., ed., 1977, Schlag Nach!. Meyers Lexikonverlag, Mannheim.

Hartman,C.W., 1901, Archaeological Researches in Costa Rica. Royal Ethnographical Museum, Stockholm.

1907, Archaeological Researches on the Pacific Coast of Costa Rica, Memoirs of the Carnegie Museum Vol.3 no.1. Pittsburgh.

Hayden, B. and Nelson,M., 1981, The Use of Chipped Lithic Material in the Contemporary Mayan Highlands, in American Antiquity Vol.46 no.4 (pp.885-898). Washington D.C.

Healy,P.F., 1978, Excavations at Rio Claro, Northeast Honduras: Preliminary Report, in Journal of Field Archaeology Vol.5 (pp.15-28). Boston.

1980, The Archaeology of the Rivas Region, Nicaragua. Wilfrid Laurier University Press, Waterloo, Ontario.

1984a, The Archaeology of Honduras: An Overview, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.113-161). University of New Mexico, Alburquerque.

1984b, Northeast Honduras: A Precolumbian Frontier Zone, in Recent Developments in Isthmian Archaeology, BAR International Series 212, Lange F.W. ed. (pp.227-241). Oxford.

Helms, M.W., 1979, Ancient Panama. University of Texas Press, Austin.

Heyden, D., and Gendrop, P., 1988, Pre-Columbian Architecture of Mesoamerica. Faber and Faber, London.

Ichon, A., 1980, Archéologie du Sud de la Péninsule d'Azuero, Panama, Etudes Mésoamericaines Serie 2. Mission Archéologique et Ethnologique Française au Mexique, Mexico City.

Kempen, M.E., 1972, The Sculptures of El Tajín. University of Florida, Tallahassee.

Joyce, T.A., 1916, Central American and West Indian Archaeology. Warner Publishing, London.

Kennedy, W.J., 1968, Archaeological Investigations in the Reventazón River Drainage Area, Costa Rica. Ph.D.dissertation, Tulane University. New Orelans.

Ladd, J., 1964, Archaeological Investigations in the Parita and Santa Maria Zones of Panama, Bureau of American Ethnology, Smithsonian Institution, Bulletin 193. Washington D.C.

Lange, F.W., 1971a, Culture History of the Sapoa River Valley, Costa Rica. Ph.D.dissertation, University of Wisconsin.

1971b, Northwest Costa Rica: Pre-Columbian Circum-Caribbean Affiliations, in Folk Vol.13 (pp.43-64). Copenhagen.

1976, Bahias y Valles de la Costa de Guanacaste, in Vínculos Vol.2 No.1 (pp.45-66). Museo Nacional de Costa Rica, San José.

1980, The Formative Zoned Bichrome Period in northwestern Costa Rica based on excavations at the Vidor site, Bay of Culebra, in Vínculos Vol.6, 1-2 (33-42). Museo Nacional de Costa Rica, San José.

1984a, Cultural Geography of Pre-Columbian Lower Central America, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.33-60). University of New Mexico, Alburquerque.

1984b, The Greater Nicoya Archaeological Subarea, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.165-194). University of New Mexico, Alburquerque.

Lange, F.W., ed., 1984, Recent Developments in Isthmian Archaeology, BAR International Series 212. Oxford.

Lange, F.W., and Stone, D.Z., 1984, Introduction, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.3-12). University of New Mexico, Alburquerque.

Lange, F.W., and Stone, D.Z., eds., 1984, The Archaeology of Lower Central America. University of Ne Mexico, Albuquerque.

Lehmann, W., 1909, Diary Notes, manuscript in the Archives of the Ibero-Amerikanisches Institut, Berlin.

1910, Ergebnisse einer Forschungsreise in Mittelamerika und Mexiko 1907-1910, in Zeitschrift fuer Ethnologie, Heft 5. Berlin.

1913, Die Archaeologie Costa Ricas, Sammlung Felix Wiss. Museum der Naturhistorischen Gesellschaft, Nuernberg.

Leibsohn, D., 1988, The Costa Rican Effigy Head Tradition, in Costa Rican Art and Archaeology, Lange F.W. ed. (131-160). University of Colorado, Boulder.

Linares, O.F., 1968, The Cultural Chronology of the Gulf of Chiriqui, Panama, Smithsonian Contributions to Anthropology, no.8. Smithsonian Institution, Washington, D.C.

1976, Animals that were bad to eat were good to compete with: An Analysis of the Conte Style from Ancient Panama, in Ritual and Symbol in Native Central America, University of Oregon Anthropological Papers No.9, Young, P. and Howe, J., eds. Eugene.

1977, Ecology and the Arts in Ancient Panama: On the Development of Social Rank and Symbolism in Central Provinces, Studies in Pre-Columbian Art and Archaeology_no.17. Dumbarton Oaks, Washington D.C.

1979, What is Lower Central American Archaeology?, in Annual Review of Anthropolgy 8, ed. B.J. Siegel. Palo Alto.

1980, Conclusions, in Adaptive Radiations in Prehistoric Panama, ed. Linares, O.F. and Ranere, A.J.(233-247). Harvard University, Cambridge, Mass.

Linares, O.F., and Ranere,A.J., eds., 1980, Adaptive Radiations in Prehistoric Panama, Peabody Museum Monographs no.5. Harvard University, Cambridge, Mass.

Linares, O.F., Sheets, P.D. and Rosenthal, J.E., 1975, Prehistoric Agriculture in Tropical Highlands, in Science Vol.187 (pp.137-145). Washington D.C.

Lingen, J.K., 1986, Stylistic and Iconographic Study of Lower Central American Stone Sculpture. Ph.D.dissertation, University of New Mexico, Albuquerque.

Longyear, J.M., 1944, Archaeological Investigations in El Salvador, Memoirs of the Peabody Museum for Archaeology and Ethnology, Vol.9 no.2. Harvard University, Cambridge, Mass.

Lothrop, S.K., 1926, Pottery of Costa Rica and Nicaragua, Contributions from the Museum of the American Indian, no.8. Heye Foundation, New York.

1937, Coclé: An Archaeological Study of Central Panama Part 1, Memoirs of the Peabody Museum for Archaeology and Ethnology, Vol.7. Harvard University, Cambridge, Mass.

1942, Coclé: An Archaeological Study of Central Panama Part 2, Memoirs of the Peabody Museum for Archaeology and Ethnology, Vol.8. Harvard University, Cambridge, Mass.

1950, Archaeology of Southern Veraguas, Panama, Memoirs of the Peabody Museum of Archaeology and Ethnology, Vol.9 no.3. Harvard University, Cambridge, Mass.

1959, A Re-Appraisal of Isthmian Archaeology, Mitteilungen aus dem Museum fuer Voelkerkunde Hamburg, Vol.25. Hamburg.

1963, Archaeology of the Diquís Delta, Costa Rica, Papers of the Peabody Museum of Archaeology and Enthnology, Vol.51. Harvard University, Cambridge, Mass.

1966, Archaeology of Lower Central America, in Handbook of the Middle American Indians, Vol.4, R. Wauchope ed. University of Texas Press, Austin.

MacCurdy, G.C., 1911, A Study of Chiriquian Antiquities, Memoirs of the Connecticut Academy of Arts and Sciences, Vol.3. New Haven.

Magnus, R.W., 1978, The Prehistoric and Modern Subsistence Patterns of the Atlantic Coast of Nicaragua: A Comparison, in Prehistoric Coastal Adaptations: The Economy and Ecology of Maritime Middle America, Stark, B.L. and Voorhies, B., eds.(pp.61-80). Academic Press, New York.

Mason, J.A., 1945, Costa Rican Stonework, Anthropological Papers, American Museum of Natural History, Vol.39 part 3. New York.

Métraux, A., 1963, Warfare, Cannibalism, and Human Trophies in Handbook of South American Indians, Vol.5, Steward J.H. ed. (pp.383-409). New York.

Mitchell, R. and Asher, J., 1961, A Pottery Collection from Parita, in Panama Archaeologist, Vol.4/1. Balboa.

Norweb, A.H., 1961, The Archaeology of the Greater Nicoya Subarea, manuscript, Peabody Museum of Archaeology and Ethnology. Harvard University, Cambridge, Mass.

Parsons, L.A., 1969, Bilbao, Guatemala, Vol.2, Publications in Anthropology 12. Milwaukee Public Museum.

Pfeiffer, R. 1987, Die Steinaltaere Costa Ricas, in Baessler Archiv, Neue Folge Band XXXV/I. Berlin.

1991, Reibstein oder Opfertisch (manuscript).

Piña Chan, R., 1960, Mesoamerica, I.N.A.H. Memorias no.6. Mexico.

Piperno, D.R. and Clary, K.H., 1984, Early Plant Use and Cultivation in the Santa Maria Basin, Panama, in Recent Developments in Isthmian Archaeology, BAR International Series 212, Lange F.W. ed. (pp.85-121). Oxford.

Popenoe, D.H., 1936, The Ruins of Tenampua, Honduras, in Annual Report of the Smithsonian Institution, 1935. Washington D.C.

Portillo, J.L., Portilla, M.L., and Matos, E., 1981, El Templo Mayor. Bancomer, Mexico.

Rago, A., 1989, The Development of Formative Villages in Southern Costa Rica. M.A. Thesis, University of Colorado, Boulder.

Ranere, A.J., Cooke, R. and Hansell, P., 1980, Food Procurement in the Parita Bay Region of Panama 5000 BC - AD 500, paper presented at the 45th Annual Meeting of the Society for American Archaeology. Philadelphia.

Rouse, I., 1963, The Arawak, in Handbook of the South American Indians, Vol.4, Julian H. Steward ed. (pp.507-546). New York.

Sahagún, B.de, 1959, Florentine Codex: General History of the Things of New Spain, trans. Anderson A.J.O. and Dibble C.). School of American Research, Santa Fe.

Schultes, R.E. and Hofmann, A., 1979, Plants of the Gods. London.

Schroeter, G.von, 1895, Notes, manuscript in the Archive of the Voelkerkundenmuseum, Wien.

Sheets, P.D., Rosenthal, J.E. and Ranere A.J., 1980, Stone Tools from Volcan Baru, in Adaptive Radiations in Prehistoric Panama, Linares, O.F. and Ranere A.J. eds., Peabody Museum Monographs, no.5 (pp.404-428). Harvard University, Cambridge, Mass.

Snarskis, M.J., 1978, The Archaeology of the Central Atlantic Watershed of Costa Rica. Ph.D.dissertation., Columbia University.

1979, El jade de Talamanca de Tibás, in Vínculos Vol.5 (pp.89-106). Museo Nacional de Costa Rica, San José.

1981a, The Archaeology of Costa Rica, in Pre-Columbian Art of Costa Rica (pp.15-84). Abrams, New York.

1981b, Catalogue in Pre-Columbian Art of Costa Rica (177-227). Abrams, New York.

1982, La Ceramica Precolombina en Costa Rica. Instituto Nacional de Seguros, San José.

1984a, Prehistoric Microsettlement Patterns in the Central Highlands-Atlantic Watershed of Costa Rica, in Recent Developments in Isthmian Archaeology, BAR International Series 212, Lange F.W. ed. (pp.153-177). Oxford.

1984b, Patterns of Interregional Contacts as seen from the Central Highlands-Atlantic Watershed of Costa Rica, in Inter-Regional Ties in Costa Rican Prehistory, BAR International Series 226, Skirboll E. and Creamer W. eds. (pp.29-44). Oxford.

1984c, The Lower Caribbean, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.195-232). University of New Mexico, Alburquerque.

Spinden, H.J., 1925, The Chorotegan Culture Area, in Proceedings of the 21st Congress of Americanists, Part 2 (pp.529-545). Gothenburg.

Spranz, B., 1957, Die Steinarbeiten der Sammlung Lahmann, Costa Rica, in Jahrbuch der Wittheit zu Bremen, Band 1. Bremen.

Squier,E.G., 1853, Travels in Central America, Vol.2. New York.

Stevens, R.L., 1964, The Soils of Middle America and their Relation to Indian Peoples and Cultures, in Handbook of the Middle American Indians, Vol.1, West R.C. ed. University of Texas Press, Austin.

Stirling, M.W., 1969, Archaeological Investigations in Costa Rica, in National Geographic Society Research Reports, 1964 Projects (pp.239-247). Washington D.C.

Stone, D., 1941, Archaeology of the North Coast of Honduras, Memoirs of the Peabody Museum for Archaeology and Ethnology, Vol.9 no.1. Harvard University, Cambridge, Mass.

1957, The Archaeology of Central and Southern Honduras, Papers of the Peabody Museum for Archaeology and Ethnology, Vol.49 no.3. Harvard University, Cambridge, Mass.

1958, Introduction to the Archaeology of Costa Rica. Museo Nacional de Costa Rica, San José.

1964, The Stone Sculpture of Costa Rica, in Essays in Pre-Columbian Art and Archaeology, S.K. Lothrop ed. Harvard University, Cambridge, Mass.

1966, Synthesis of Lower Central American Ethnohistory, in Handbook of the Middle American Indians, Vol.4, Eckholm G.F. and Willey G.R. eds. (pp.209-233). University of Texas Press, Austin.

1972, Pre-Columbian Man Finds Central America. Peabody Museum Press, Cambridge, Mass.

1977, Pre-Columbian Man in Costa Rica. Peabody Museum Press, Cambridge, Mass.

Stone, D. and Balser, C., 1965, Incised Slate Discs from the Atlantic Watershed of Costa Rica, in American Antiquity Vol.30 no.3 (pp.310-329). Salt Lake City.

Strong, W.D., 1935, Archaeological Investigations in the Bay Islands, Smithsonian Miscellaneous Collections, Vol.92 no.14. Smithsonian Institution, Washington D.C.

Sweeney, J.W., 1976, Ceramic Analysis from Three Sites in Northwest Guanacaste, in Vínculos Vol.2 (PP.37-44). Museo Nacional de Costa Rica, San José.

Torres de Arauz, R., and Velarde B, O.A., 1978, El Parque de El Caño, in Revista Patrimonio Historico, Vol.2 No.2. Panamá.

Verneau, R. and Rivet, P., 1912, Ethnographie Ancienne de l'Equateur. Paris.

Verrill, A.H., 1927, Excavations in Coclé Province, Panamá, Museum of the American Indian, in Indian Notes 4 (pp.47-61). Heye Foundation, New York.

Wassen, S.H., 1965, The use of some specific kinds of South American Indian snuffs and related paraphernalia, in Ethnological Studies 28 (pp.1-116). Gothenburg.

West, R.C., 1964a, Surface Configuration and Associated Geology of Middle America, in Handbook of the Middle American Indians, Vol.1, West R.C. ed. University of Texas Press, Austin.

1964b, The Natural Regions of Middle America, in Handbook of Middle American Indians, Vol.1, West R.C. ed. University of Texas press, Austin.

Willey, G.R., 1959, The 'Intermediate Area' of Nuclear America: Its Prehistoric Relationships to Middle America and Peru,in Actas, 33rd International Congress of Americanists, Vol.1. San José.

1971, An Introduction to American Archaeology, Vol.2. Prentice Hall, Englewood Cliffs, New Jersey.

1984, A Summary of the Archaeology of Lower Central America, in The Archaeology of Lower Central America, Lange F.W. and Stone D.Z. eds. (pp.341-378). University of New Mexico, Alburquerque.

Williams, E., 1988, The Stone Sculpture of Ancient West Mexico. Ph.D.dissertation, Institute of Archaeology, University of London.

Wiss, F., 1903, Notes, manuscript in the Archive of the Voelkerkundenmuseum, Muenchen.

Zelaya-Hidalgo, G.R., Bruhns, K.O., Dotta, J., 1974, Monumental Art of Chontales: A description of the sculpture style of the Department of Chontales, Nicaragua, Treganza Museum Papers No.14. San Francisco State University.